JULY
1922

VETERINARY MEDICINE

4753 GRAND BOULEVARD
Chicago

Extra Uterine Gestation

Control of Glanders in the United States Army

Comparisons Between Equine and Bovine Sterility

Diseases of the Mammary Glands of Swine

The Eggs and Larvae of Cattle, Sheep, and Goat Parasites

Airedale Recovers from Fracture of the Thoracic Vertebra

Wrinkles, Shields and Swirls

Ropy Milk, and More Than Fifty Other Articles

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VOL. XVII **No. 7**

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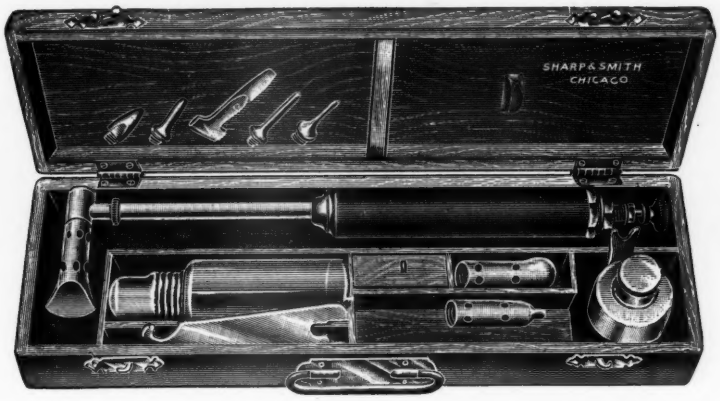

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VETERINARY MEDICINE

Published Monthly by the Veterinary Magazine Corporation, 4753 Grand Blvd., Chicago, Ill.

L. A. Merillat and D. M. Campbell, Editors; J. F. DeVine, A. T. Kinsley, A. Eichhorn, L. H. Pammel, C. A. Zell, M. C. Hall, E. L. Quitman, W. J. Martin, E. Merillat and J. I. Handley, Department Editors; I. C. Brenner, Advertising Manager.

Entered as second-class matter, July 19, 1910, at Chicago, Ill., under Act of Congress of March 3, 1873.
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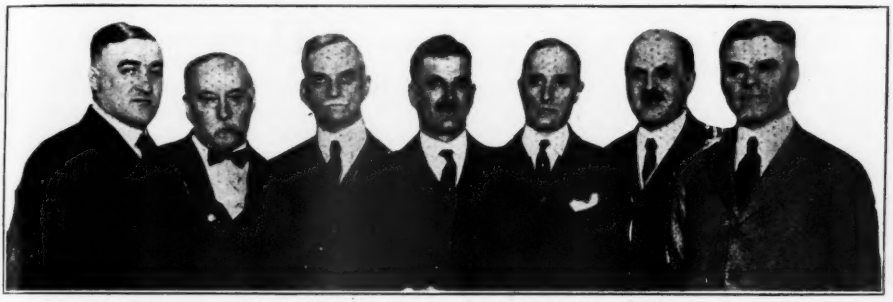
Veterinary Medicine

Vol. XVII JULY, 1922 Number 7

BIG MEN TACKLE BIG PROBLEM



Delegates Who Met in Chicago During May to Study Questions Appertaining to Reforestation. Reading from Left to Right, They Are: Governor J. A. O. Preus, of Minnesota; Professor L. H. Pammel, One of the Editors of Veterinary Medicine; Wm. A. Guthrie, Indiana; Professor James Toumey, of Yale University; John V. Norcross, Chicago; Wyllys Baird, Chicago; W. L. Hall, Former Assistant Federal Forester

MILK TESTING AS AN ADDED VOCATION FOR PRACTITIONERS

At this time when the whole civilized world is beginning to agree that much of the physical imperfection of mankind and many of its diseases are directly traceable to a low per capita consumption of milk, and it is beginning to dawn upon the veterinary profession that its proper station is with and not against the producer in spreading milk-drinking propaganda, the situation offers an opportunity for the veterinary practitioner to enlarge his realm of usefulness by becoming the accepted authority on milk standards in every community. It seems important that we grow with and in the milk industry. The veterinarian understands cows and he understands milk (physically, bacteriologically and chemically). He is the one man in every district who is qualified to solve questions arising in this connection from every angle; he is the one logical man whom the dairyman and breeder should be consulting to select the valuable from the useless cow, the profit-producing cow from the "boarder," the producer of precious from worthless offspring; he is the one man in many communities who could assure his clients from time to time that they are not victims of unfair butterfat tests at the condensery, milk station or distributing plant; and to see that they are paid for all the butter fat their cows produce; he is the one man qualified as a referee between the distributor and consumer when deliveries are suspected of falling below approved standards; and he is the one man to gather information about the value of community bulls some of which are slaughtered only to learn later that they had been sires of high merit.

Much of this work is undone because it has not been exploited and what is done goes to the purely commercial expert who is responsible only to those who employ him—the milk dealer or the testing association.

The veterinary practitioner can begin this work by simply equipping and qualifying himself to do it and by showing his clients the unwisdom of pursuing the hit-or-miss tactics of breeding or keeping animals proved to be unprofitable.

The large breeder is attending to these matters in every detail but the small one, if he tests his cows at all, usually limits his investigations to one or two cows thought to be worth the expense of advanced registry, and leaves the rest of his herd in the uncertain class. By preparing to make accurate tests we would put ourselves in a position to do a great service to our clients and to the country in general and at the same time fix veterinary practice solidly into an industry with which

we have heretofore not been closely enough allied and whose problems, other than those of disease, we have never attempted to study systematically.

In view of promoting such a departure through publicity and by publishing a course of instruction in the department of zootechnics on milk and cow testing we submit the following questionaire to our readers:

1. Are you fully familiar with the details of the milk situation in your community?

2. In your opinion, to what extent could such an enterprise be developed in your district?

3. Have you a working knowledge of milk tests, or would you want a full instruction on the subject?

MILK, THE BULWARK OF THE NATIONS

It is a significant fact that milk is a prime factor in the development of stature. The milk drinking people are large, while the non-milk drinking ones fall below the desired average in size, strength, endurance, and longevity. The inhabitants of the tropics who are not milk drinkers in general are smaller and weaker than the northern races, and besides in the warm countries, where some milk is consumed, it is a thin and unpalatable product that has but little influence in the general welfare of the people.

The inhabitants of Southern China, who do not drink milk, are small, puny, and have a high infantile mortality, while the Northern Chinamen, who maintain cattle herds, are a much larger people.

The Zulus of South Africa are the largest natives of that continent, because they maintain herds of cows for milking purposes.

The per capita consumption of milk in Sweden is almost twice that of the United States and the Danes another specimen of big people are great consumers of milk products. In short the trail of the big types of humans is but the trail of the cow.

This, and other very conclusive evidence, might be gathered to show the direct connection between milk and large stature. In fact, where milk is lacking, the frame of the inhabitants does not reach a high state of development, because large stature, being mainly due to skeletal growth, requires mineral in the form found only in milk, besides vitamines and protein needed to build up the other tissues. It is, therefore, undeniable that in the Jersey, the Holstein, et al., lie the strength of any nation.

PUBLISHERS' ETHICS

A prospective advertiser writes: "With reference to your article on periodic ophthalmia I wish to state that I have a remedy for this disease that has given me good success for a number of years. I have never given it out for fear it would be discredited on account of its simplicity and because I had been thinking of putting it up to sell to veterinarians. What are your charges for advertising and what is your opinion of my project?"

The accepted ethics of the veterinary profession prohibit the exploitation of secret remedies. In fact there are already too many secret and semi-secret remedies on the market for the common good. The editors of VETERINARY MEDICINE belong to a national association of publishers which lives up to certain standards we reproduce herewith as a reply to this request and for the information of all concerned:

1. To consider, first, the interests of the subscriber.

2. To subscribe to and work for truth and honesty in all departments.

3. To eliminate as far as possible, personal opinions from news items, and to make all criticisms constructive.

4. To refuse to publish "puffs," free reading notices or paid "write ups," keeping the columns independent of advertising consideration.

5. To decline any advertisement which has a tendency to mislead or which does not conform with business integrity.

6. To solicit subscriptions and advertisements solely upon the merits of the publication.

7. To supply advertisers full information regarding character and extent of circulation.

8. To co-operate with organizations and individuals engaged in the industry.

9. To avoid unfair competition.

10. To determine what is the highest and largest function of the field which it serves and then to strive in every legitimate way to promote that function.

THE FLAVINES HAVE REMARKABLE ANTISEPTIC PROPERTIES

Flavines were first produced by L. Benda at the suggestion of Ehrlich who conducted experiments on trypanosome diseases with these dyes. Benda first reported his work in 1912. A year thereafter Browning, a student of Ehrlich's, and Gilmour, demonstrated their remarkable bactericidal properties and recommended their use as a wound antiseptic and introduced them as therapeutic agents.

The dyes in this group are coal tar derivatives and are classed as acriding dyes. Their great antiseptic properties have attracted much attention in Europe for several years, but it is only rather recently that they have come into general use in America. The very beneficial and deesirable actions of the flavines in the treatment of wounds and their intravenous use in infectious diseases, was only recently called to the attention of veterinarians in America.

In contrast to other antiseptics, these dyes can be used to much greater advantage in the presence of blood, serum or wound secretions than any other known antiseptic. No coagulation of the protein or albuminous constituents of these fluids occurs—a feature which is universally recognized as a big advantage over other antiseptics. In the presence of serum, flavines exert a bactericidal power on the Staphylococcus aureus 800 times that of dichloramine-T and 200 times greater than is necessary to kill the common pathogenic microorganisms.

DOES EVOLUTION DULL THE SENSES?

Dr. G. B. Shaddock in a recent book on African pygmies attempts to show that the special senses in civilized human beings are much less keen than those of animals and barbarians and cites as proof of this contention, the remarkable development of certain of the special senses of African pygmies and of different species of animals, as compared with the dullness of the same senses in human beings in general.

Pygmies can hear ordinary conversational tones a distance of 100 yards without difficulty and the North American Indian by laying the ear on the ground detects the approach of men or animals at a great distance. The dog can hear sound the human ears cannot perceive. Human beings have a very poor sense of smell, as compared with that of the dog, which can smell objects where they were many hours before, while man can only distinguish bad from pleasant odors, and only when these are pronounced. There are bushmen that can see a bird 10,000 feet in the air that is invisible to the eye of civilized men without a field glass.

By having learned to determine shape, size, and quality of things by sight, the sense of touch in man has slumped to the point where we can only determine hot from cold, and rough from smooth objects, while the horse through the keen tactile sense of its lips, can reject the finest undesirable objects from its food.

In short, the whole trend of the argument centers on endeavoring to show that as the spirit of the individual develops the sensorium deteriorates.

Is this, however, not purely a matter of training? Any one of the special senses of man is capable of undergoing a degree of development quite as fine as that of any animal, minus of course the disadvantage arising from undeveloped organs deteriorated because high development has not been needed through countless generations. The whole question is purely one of balance. Man has a better balance among all of the special senses and a lower degree of development of any one of them because the operation ensemble and not of a single highly developed sense alone is needed by man.

BACTERIN TREATMENT FOR STRANGLES

Encouraging success in the immunization of horses in the Belgian Army against strangles has been obtained by the use of a bacterin prepared by growing the streptococcus equi in bouillon, according to the report of Van Secegem. This is the Wright or English method of preparing bacterin.

'TWAS EVER THUS

Thirty years ago when the advance guard of the veterinary practitioners blazed a trail into pioneer territory, they drove long distances over bad roads, treated only very serious cases and were able to collect only very small fees, but in spite of these handicaps those who had ability and business tact built up great practices—the others failed. Showing that you can treat animals better than the untrained was the big job of the pioneer just as it is the big job of the practitioner today.

Editors' Personal Page

He who seeks no information from others is soon trailing at the end of the procession.

On his departure for home after his recent sojourn in America, Conan Doyle said: "I have but one criticism to make of the American people. They mistreat their horses."

"There is about as much danger of getting too much milk in the diet as there is of breathing too much air," says a food specialist of the Colorado agricultural college.

Battles Ahead

1. Fight the big menaces that threaten to invade veterinary practice.
2. Fight for the horse and against the tractor.
3. Fight with and not against the live stock interests in all campaigns for better conditions.
4. Fight for the Horse Association of America.
5. Fight for good roads that can be used for horse drawn vehicles.
6. Fight for a higher per capita consumption of milk, and meat.
7. Fight to make veterinary schools 100% efficient.—B. D. R.

CLASSIFICATION UNWISE

"From agents who have called at my office during the past two years or so I have learned that veterinarians are classified into the following groups," writes a reader who practices not a thousand miles from the Missouri river:

1. Graduates.
2. Licensed graduates.
3. Non-licensed graduates.
4. Licensed non-graduates.
5. Non-licensed non-graduates.
6. Qualified veterinarians.
7. Recognized veterinarians.
8. Accredited veterinarians.
9. Two-year men.
10. Three-year men.
11. Four-year men.
12. One-year men.
13. Permit holders.
14. Legal practitioners.
15. Illegal practitioners.
16. Quacks.

Although written in a frivolous mood there is food for thought in the misconception of the facts created in the minds of the outsider by this form of self-classification, when in truth our welfare depends upon showing that we are a solid aggregation working harmoniously for a common purpose.

DEPARTMENT OF LABORATORY DIAGNOSIS DISCONTINUED

As so many specimens are arriving in an improper state of preservation, and the fact that almost everyone now has access to nearby laboratories, it has been thought advisable to at least temporarily discontinue this department, in spite of the fact that its popularity has continued to increase since the very beginning.

The editorial staff, we are sure, voices the sentiment of all concerned when it compliments Dr. Zell for his untiring efforts and the high ideals that have always governed them, and for the help he has given to so many practitioners.

In short, it seems impracticable to carry on such work for veterinarians in a country so large as ours.

Nowadays the term "pure-bred" does not mean much when applied to an animal, unless it is backed up with an authenticated record of worth while performance. The terms "standard bred," "pure bred," etc., are parodies when they decorate poor cows and slow horses.

GIVE BUDDY A CHANCE

The U. S. Veterans' Bureau has 130,738 ex-service men in training status who are receiving instruction in every trade, industry, profession, and in agriculture. They are completing their courses at the rate of 500 a month. Every person completing a course of instruction is a skilled workman. If you want persons trained in a particular vocation write to: Rehabilitation Division, Employment Section, U. S. Veterans' Bureau, Washington, D. C.

We respectfully request our subscribers and advertisers to consider this opportunity to secure the skillful service of deserving men.

Important News and Announcements

SIBERIAN VETERINARIANS APPEAL FOR HELP

To the Editor of Veterinary Medicine:

Be so kind as to give space to the following invocation in your next issue:

The Siberian Veterinary Zootechnical Institute was established in Omsk, 1918, to study local Siberian zootechnical conditions, to organize a campaign against epizootics and to supply Siberia with veterinarians.

In spite of the severe conditions of life, after the great war against Germany, and the impossibility to communicate with foreign countries the institute broadened its activities, thanks to the personal initiative and energy of scientific and pedagogic personnel of the old veterinary institute at Kazan. But today the institute cannot continue without foreign help. It needs school books and laboratory supplies. Not knowing any other way out of the present conditions a group of professors have the honor to appeal to you in the name of culture and science for moral and material support, as much as it is possible to assure the existence of the institute and its co-laborators and to meet the misfortunes of life after a great war and the bad harvest of last year.

We remain in hopes of receiving from our colleagues food supplies, etc., that can be sent to Siberia.

Rector Lapajninam.

VETERINARY CORPS NEWS

Lt.-Col. Roy Stancliff is transferred from the Surgeon General's office to Fort Sam Houston, Texas, to serve as Eighth Corps veterinarian, October 1, 1922.

Lt.-Col. Morse, M. C., who has been chief of the veterinary service for several years, goes to the Philippines in October.

Major W. R. Pick, now at Camp Travis, as division veterinarian of the Second Division, is transferred to the Army Medical School at Washington, for instruction, and Major Aquilla Mitchell, fills the vacancy.

Lt.-Col. J. R. Jefferies has been ordered before a retiring board at Washington, D. C.

Col. Wm. V. Lusk, whose health has been a matter of considerable concern to his friends for several years, and who is a veterinarian of the Eighth Corps area, is confined to the hospital at Fort Sam Houston.

Veterinarians who desire to take the examination for federal accredited herd work are requested to report at the state house at Springfield on June 30. No application required.

Incorporation of the Simplicity Manufacturing Company, Chicago, Illinois, is announced. The incorporators are J. V. Lacroix, E. G. Dable, Jr., and J. T. Hernsheim. The company will engage in the manufacture and sale of veterinary hospital and farrier's equipment.

The Missouri Valley Veterinary Association will hold its regular annual meeting at Omaha, Nebraska, July 10, 11 and 12, 1922. R. F. Bourne, Secretary.

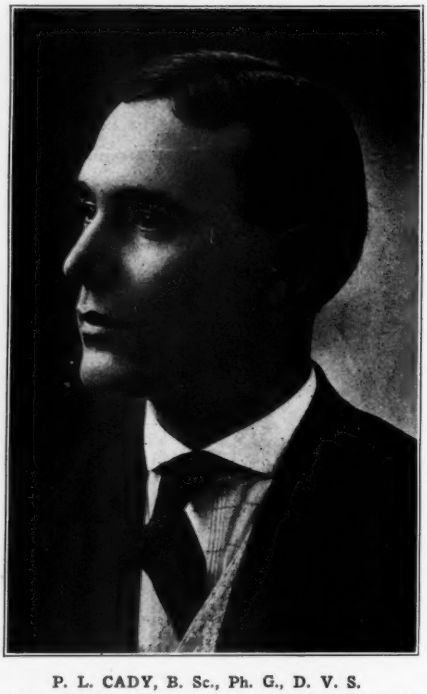
The Society of American Bacteriologists maintain a collection of type cultures of various bacteria at the Army Medical Museum, Washington, D. C.

Dr. John F. DeVine, editor of the department of cattle practice, addressed the New York State Guernsey Breeders' Association, on the subject of "Advanced Registry Work, Delayed Breeding and Its Effects on Our Dairy Breeds," in which he took the position that forced feeding, close confinement, and delayed breeding have affected our best producing cows that it would seem the practice would soon have to be stopped, if we wish to save the best blood lines and the greatest animals for future use.

Our Accolade

Dr. P. L. Cady, President of The Missouri Valley Veterinary Medical Association, 1922, is a native son of the Middlewest, born at Bellwood, Nebraska, on his father's farm, August 1, 1883.

He attended the public schools where all good men find their first inspiration, later the Columbia, Nebraska High School, the Fremont, Nebraska Normal and after teaching school for three years graduated at the school of pharmacy of the latter college where he received the degrees of bachelor of science and graduate pharmacist. His veterinary education was received under the old masters at the Kansas City Veterinary College where he took the degree of doctor of veterinary science in 1910. In college he is described by one of his old teachers as a cool-headed, deliberate worker with a determination of getting at the bottom of things and always on the right side of any controversy where the welfare of the students or teaching staff was at stake.



P. L. CADY, B. Sc., Ph. G., D. V. S.
President, Missouri Valley Veterinary Medical Association

On leaving the veterinary college he located at Fremont, Nebraska, for general practice, where he remained seven years when he moved to Arlington, a few miles east, to improve his prospects, and to look after his farming interests at that place.

Cady is not only a bachelor of science, a graduate pharmacist and a doctor of veterinary science, he has also the distinction of being a practical farmer and a very ardent worker for veterinary associations. He is a member of the Nebraska State Veterinary Medical Association, The American Veterinary Medical Association and the Missouri Valley Veterinary Medical Association. He served the former as president in 1913 and is now the presiding officer of the latter.

The cool-headedness attributed to him by one of his teachers is borne out by the manner in which he handled one of the stormiest sessions in the history of the Missouri Valley Veterinary Medical Association at Kansas City in February. Although the very air of the session was rent with charges and supercharges against certain members who were up for summary dismissal from membership Cady maintained a discipline that was beautiful to behold and at the hazard of his own popularity insisted that only fair play shall prevail.

A man may become distinguished by chance; he may be elected or appointed to a high public office; he may achieve distinction by accumulating more that the average proportion of wealth; or he may become famous through a single accomplishment; but he who grows up in a community, is educated from that community and then goes back and does his bit for society among the same people, without show or affectation and has deported himself among the colleagues of his profession in such a way as to be selected as a leader attains distinction by sheer uncamouflaged merit. His accolade is earned, not thrust upon him by chance; and is a decoration for merit, for loyalty and obedience to an accepted code.

In September, 1910, Margaret Larson, his old school day sweetheart, displayed her good judgment by becoming his wife and is now the proud mother of three sons: Duane (10), Dick (7), and Jack (4).

General Practice

Edited by W. J. MARTIN, Medicine, and L. A. MERILLAT, Surgery

Extrauterine Gestation

By Professor G. Hebrant, Brussels, Belgium

Comments by Professor W. L. Williams, Ithaca, N. Y.

CASES of extrauterine gestation are very rare in veterinary medicine; Belgian and foreign literature do not contain very much information in this connection. It has been our privilege recently to operate on a small bitch thought to be affected with an abdominal tumor, but which proved to be a fetus hidden in the folds of the omentum. The conditions under which the development of this embryo was affected and the circumstances which brought about surgical intervention appeared to us to be interesting enough to justify the following report. It is an incident so rare that in a practice of more than twenty years, in a small animal clinic, we had never observed a case before.

During last December, a colleague presented a small native bitch, four years old, that was presenting an abdominal tumor. The tumor could be felt by palpation. The bitch simply manifested inappetence and a general malaise during several days that was little observed. Submitted to an examination, our colleague in palpating the abdomen, could feel the tumor through the abdominal walls. The growth seemed to have the form and volume of a goose-egg, located in the anterior abdominal region, behind the stomach. It was free from all adhesions to the surrounding organs, only slightly sensitive, and displacable to the point that it could be brought back as far as the pelvis. On account of its irregular consistency, presenting some places more resistant than others, certain parts easily yielded to finger pressure; and it seemed to show a more or less striking lobulation. Let us say at once that the character was such as to justify a diagnosis of malignant tumor.

In regard to the particular location of this tumor, which seemed to be developed on one of the intra-abdominal organs, it could not be thought of as attached to the mesenteric lymph nodes, because these when diseased, are perceived like a string of beads attached to the vertebral column. It could not have been an intestinal obstruction from a foreign body, because the digestive symptoms presented by the patient were not sufficiently alarming, and the consistency of the tumor was not such as is found in the usual obstructing objects; nor was it like a stercoral mass. One could not attribute it to a tumor of the liver, of the pylorus, or of the spleen, in view of its movability. Pregnancy was also excluded as the bitch had not been bred for more than four months. The uterus could not be invoked as the point of attachment for the reason that when it was moved about no serous attachment, having any continuity with it, could be felt. There was still the ovary; we could not imagine it as a cyst of this organ as the irregular consistency of the tumor did not permit of this diagnosis, but we could possibly find ourselves in the presence of a tumor of this organ that had become pendulous by its weight dragging upon and elongating the ovarian ligaments. It is this last diagnosis we finally decided upon, but without insisting upon its certitude.

The bitch in question had been bred four months before without becoming pregnant, information to which the owner attached no importance as such things were frequent enough in the breeding of dogs. The bitch had been a mother. After having been bred this last time, and when she should have begun to show signs of pregnancy, a swelling of the mammae and a restlessness appeared as if she was pregnant, but several days later everything was normal.

The owner did not pay any attention to this as such occurrences are frequent in bitches. However, our colleague and I, should have attached some importance to this information in our deliberations, but cases of extrauterine gestation are so rare we thought of nothing except abdominal tumor.

Through a laparotomy performed on the

median line, a tumor was drawn out which was not difficult to detach from the omentum in which it was found. It was not adhered except on a limited area by its contiguous relation and was not attached anywhere to the peritoneum. It was not necessary to use the scissors nor the bistoury to detach it. It tore off very easily by rupture of the capillaries passing between the omentum and the tumor at the adherent points. An insignificant hemorrhage followed, but it stopped spontaneously. The abdomen reclosed, according to the usual methods of suturing, healed by primary union. The patient was completely cured in ten days.

The tumor was enclosed in a regular, ovoid sac, smooth over the greater part of its external surface, only the adherent parts were rough. The sac was fibrous and very tough and contained a mass entirely covered externally with black hairs and molded to the form of the sac. By the transparency of the sac, the character of the contents was already suspected. On first look this monstrous parasite was seen to be constituted of a mass of flesh covered with a thick skin, certain parts were ossified, notably a short transverse zone, a centimeter large, toward the middle of the mass. It was this region that contained the adhesions. At no part could a vestige of the umbilical cord be found.

But on sectioning the fetus longitudinally, a cutaneous ply, giving access to a deep transverse fold, could be seen at one point of its small circumference. This fold enlarged and deployed within the fetus. It was thus recognized that it was not a simple tissue and that inside there was a fetus in an advanced state of organization. At one end a head could be recognized, and at the other the vestige of the tail. On the borders were rudiments of legs, two of which showed digits and claws. Sectioned through its long axis from head to tail, the vertebral column was found in the course of ossification, in the form of protovertebrae in lineal series. At the head, the skin covered an ossified cranium which contained nervous substance. The branchial arches had disappeared and it was impossible to find the buccal orifice. On the surface of the longitudinal section all the fleshy mass was formed of muscular tissue without any evidence of a digestive tube.

There is no doubt that we were in the presence of an erratic malformed fetus, whose evolution was puzzling, partly because of the solid fibrous sac surrounding the monster and partly because it was independent and lived only by contact. Where did the membrane come from? It was certainly not one of the normal fetal membrane, because it had no umbilical cord. Neither was it a fold of the omentum because it was not continuous with the rest of the omentum. In seeking to clear up this obscure point, we were put in the way of the explanation that we give below in our reference to Zundel's dictionary. To this author, extrauterine gestation differs according to the place where the ova develop.

First, ovarian gestation, which he divides into two kinds: one is internal ovarian gestation, when the germ develops in the interior of the Graffian vesicle, and the other is external ovarian gestation, when the ovum escapes from the vesicle and is developed under the ovarian capsule. In these two forms, observed in domestic animals by Gurlt, the ovarian integument ruptures at a given time and the embryo falls into the abdominal cavity.

Second, tubular gestation, in which the fecundated ova, taken by the oviduct, is fixed and enveloped therein. But the oviduct, not being able to withstand the development of the embryo ruptures and discharges the ovum into the abdominal cavity.

Third, abdominal, or better still, peritoneal gestation, that is distinguished as primary and secondary, according to whether the germ is fixed at once in the abdomen or whether it is developed in the ovary or oviduct and falls into the peritoneum later. "It is admitted," said Zundel, "that the part which the ovum contacts becomes thickened and more vascular, and that it develops a serous pouch around the embryo. In one case observed on a goat by Mollart, the fetus was attached near the umbilical region of the mother by short vessels and was enclosed in an omental-like envelope adhered to the embryo throughout the whole extent. A placenta was also mentioned as being almost complete, formed in the abdomen, and attached to the serous membrane that had organized. Fonari claims to have seen a placenta in a goat that was formed from the serous membrane of the rumen." In our case there is no argument about a placenta but the existence of a fibrous sac is certain. This sac might be considered as emanating from the fibrous tissue of the ovary, in an ovarian gestation; the pouch containing the embryo pedunculating by the growing weight of the fetus in its course of develop-

ment, and at a given moment the peduncle ruptures. This is possible in our opinion, because in the case of ovarian cysts of the bitch, there is always a thick fibrous membrane that has all the characters of the pouch that we found in our operation. These cystic productions do not, however, pedunculate, but is there not a difference between an abnormal production (the cyst) and a fetus in the course of development whose ultimate destination is to be expelled normally? And note the development of this embryo. Does it not come directly from a tubular or uterine gestation, in which the uterus or the oviduct are dehiscent, leaving their contents fall into the abdomen where normal and complete evolution is prevented? The very advanced state of embryonic development of this case seems to confirm this. The fibrous sac found may represent the amnion, but it is well worth-while asking, what has become of the umbilical cord? If at the moment of rupture of the uterus there was also dehiscence of the extra-fetal membranes, the fetus would have passed naked into the abdomen and would then cause doubt as to the origin of the fibrous sac and oblige us to admit the view of Zundel, that such membranes are of peritoneal origin.

We may add in regard to this case that the fetal membranes remaining in the uterus may have been expelled at the moment they become inutile in that it is possible in dogs that this expulsion may have occurred unnoticed. All of these reflections came to our thoughts in the close examination of the contents of the sac and in pondering over the point of departure; all of which happened quite a while after the operation. It is evident that if the examination of the monstrosity could have been made during the course of the operation, more of our attention might have been directed toward the ovaries, the oviduct, and the uterus.

—Annales de Med. Veterinaire.

Comment by Professor W. L. Williams

The contribution of Professor Hebrant of an instance of extra-uterine gestation in a bitch is of unusual interest in veterinary science because the presence of the fetus in the peritoneal cavity was clinically recognized even though an erroneous diagnosis of ovarian tumor was made; and because an effort is made to explain the manner by which the fetus attained its extra-uterine location.

Differential Definition

In veterinary obstetrics there is a very vague conception of extra-uterine pregnancy. Perhaps there is some confusion as to what constitutes pregnancy or gestation. What is pregnancy? If it is admitted that pregnancy signifies the presence within the genital organs or elsewhere of a living ovum, embryo or fetus, it excludes from consideration as extra-uterine pregnancy or gestation all embryonic or fetal remains existing outside the uterus which have not undergone any part of their development in such extra-uterine location. That is, a gestation may be intra-uterine but owing to accident the embryo may escape from the uterus into the peritoneal cavity. Such an occurrence is not extra-uterine pregnancy, and it is a technical and practical error to so designate it although this is usually done in veterinary literature.

Sometimes Only a Fake

Thus there was recorded comparatively recently a case where a veterinarian erred in diagnosis, attempted to douche a pregnant uterus, the fluid naturally could not return, the uterus ruptured, the fetus fell into the peritoneal cavity and perished at once, the cow died promptly and upon autopsy the veterinarian, having found the fetus outside the uterus, designated it as a case of extra-uterine pregnancy, which it clearly was not. The fetus was extra-uterine but the pregnancy was physiological until terminated through an error.

An extra-uterine pregnancy is one in which the embryo becomes attached through its placenta to some other structure than the endometrium and develops to some degree in such surroundings.

Extra-Uterine Fetuses are Seldom, If Ever, Extra Uterine Pregnancies

I described and figured (Veterinary Obstetrics, 1917) some features as extra-uterine pregnancy. They were unquestionably extra-uterine fetuses but the right to term them extra-uterine pregnancies might very well be questioned. It is not at all impossible that they attained their complete development in the uterus and then became located outside that organ. The prevailing rule of nomenclature was followed without careful analysis.

In early medical and veterinary literature, if a fetus were discovered outside the uterus it was designated extra-uterine pregnancy, and the actual nature of the phenomenon ascribed to a variety of causes, some credible and some incredible. Every experienced veterinary practitioner has encountered rupture of the uterus with the escape of the fetus into the

peritoneal cavity, but that is not, and cannot become extra-uterine pregnancy.

If the cervical canal had not been open in these cases, the rupture would generally pass undiagnosed. The mother might survive and the fetus become encased in a deposit of lymph to form a pseudo-membrane with feeble adhesions to the contiguous surface and in this state it might remain indefinitely as an inocuous foreign body but no difference how long the fetus so remains it does not and cannot become extra-uterine pregnancy. It was an intra-uterine pregnancy and the fetus escaped into the peritoneal cavity and immediately perished. The accident terminated the pregnancy and displaced and killed the fetus. The female then became non-pregnant and the fetal cadaver extra-uterine.

Previous Views Not Now Entertained

Early veterinary writers like Zundel—upon whom Professor Hebrant bases his views—believed in primary peritoneal or abdominal pregnancy. That is, it was believed that an unfertilized ovum might drop into the peritoneal cavity, be overtaken and fertilized by spermatozoa, become attached and develop, or an ovum already fertilized might drop into the peritoneal cavity, attach itself and grow.

During recent years it has become practicable to clinically diagnose and surgically relieve extra-uterine pregnancy in woman. This fact has rendered available for study an amount of material wholly unknown to veterinarians. These studies have practically eliminated the probability of primary abdominal pregnancy in woman and there is no logical reason for believing that the same is not true for domestic animals. Modern obstetrists recognize two classes of extra-uterine pregnancy, ovarian and tubal, but the former is technical rather than of practical importance, tubal pregnancy accounting for virtually all the cases. Professor J. Whitridge Williams, in his Obstetrics, 4th edition, 1917, says, "As the fertilized ovum may be arrested at any point on its way from the Graafian follicle to the uterine cavity, it may undergo development in the ovary or in any portion of the tube, giving rise to ovarian or tubal pregnancy respectively. It is doubtful whether the ovum can become implanted upon the peritoneum and a primary abdominal pregnancy follow."

This distinguished author has operated upon numerous cases of extra-uterine pregnancy, removed the embryo, its coverings and seat of attachment and has, as have many other obstetrists and gynecologists, given each case minute and careful study. All modern writers upon obstetrics appear to be in general accord upon this point. Extra-uterine pregnancy is either ovarian or tubal. This confines pregnancy to the reproductive organs and almost wholly to the derivatives of the ducts of Mueller anterior to the cervix. The oviducts and uterus, alike in origin, are similar in some respects in structure. The restriction of extra-uterine pregnancy to the ovaries and oviducts is highly fortunate.

Even "Sterility Experts" Can Not Produce It

In recent years there has arisen from darkness a large group of "sterility experts" who cure all genital disorders by "massage of the ovaries and rupture of cysts." These disciples of darkness unquestionably rupture many ripe Graafian follicles and spill the ova into the peritoneal cavity. If these could be readily fertilized in the peritoneal cavity, become fixed and grow there, there would occur primary abdominal pregnancies galore in the cow, but Providence is kind to these "specialists" and the ova perish.

No Authenticated Case on Record

So far as I know, no genuine, indisputable case of extra-uterine pregnancy (ovarian or tubal) has yet been recorded in any domestic animal. They doubtless occur. Now and then it is recorded that a cow has died from hemorrhage following the dislodgement of a hypertrophied corpus luteum. Was the operator in error and dislodged an ovarian pregnancy? Tubal pregnancy in domestic animals has not been diagnosed either clinically or by autopsy.

Professor Hebrant's Case Reviewed

Turning to the highly interesting case recorded by Professor Hebrant there are certain data which suggest an interpretation at variance with that submitted.

1. He failed to show that the ovaries, tubes and uterine cornua were intact and showed no evidence of rupture.

2. Hebrant states that the fetal cadaver was "enclosed in a regular, ovoid sac—the sac was fibrous and very tough—Where did the membrane come from? It was certainly not one of the normal fetal membranes because it had no umbilical cord." The development of a mammalian embryo without fetal membranes is not known to be possible. When the fertilized ovum passes from the morula stage to become a blastoderm, its further evolution into an embryo involves the formation of the amnion and in higher mammals at least, an al-

lantois. These are often designated as adnexa, and thought of as mere additions of a convenient but non-essential character. But an embryo cannot form without an amnion: it is a basic and essential part of the embryo. Neither can an embryo live without an amnion.

Fetus Not Developed in Position Found

The fact that the fetus described by Hebrant had no amnion, shows that it had not lived in the position and relation in which it was found. Hebrant suggests that the fetus was nourished "by contact" but this is an unknown and certainly impossible method of nutrition in a fetus. The morula and blastoderm apparently absorb nutriment and supply means for growth, but in these the exterior cells are primitive and still perform feebly, the general functions for the maintenance of life but the formation of an embryo means the specialization of cells and embryonic nutrition is provided for by the placenta and by it only. It is impossible for a fetus to sustain life by the absorption of nutriment through a fully developed hairy skin; its function is essentially the opposite (with rare exceptions of highly volatile substances like turpentine, etc.) and repels absorption. Even if this were not true, Professor Hebrant's fetus could not have procured nutriment "by contact" because it was isolated by a tough, fibrous sac so that its surface was not in contact with any possible source of food supply.

Compared with Specimens at the New York State College

The very interesting contribution of Hebrant caused me to make a careful study of extra-uterine fetuses in the museum of the New York State Veterinary College. There is one ovine fetus and two closely adherent porcine fetuses. They are without history except they were abdominal. The fetuses are all near full term, are bent sharply ventralwards, their limbs folded tightly against the ventrum and they are enclosed in a tightly investing, tough, fibrous-appearing sac. The investing sac is at most places closely adherent to the hair—the sac does not merely lie against the hair as the amnion may if the fluid escapes but has been formed upon the hair so that the substance of the capsule encases the hairs themselves. In some places the ovine fetus is covered by a smooth, thin membrane which is wholly free from the hairs and is evidently amnion but over this is stretched the fibrous-appearing capsule. The ovine fetus has a definite umbilical cord. It is perfectly clear that it once had a full complement of fetal membranes, but they ruptured, the chorion with its cotyledons remained in probably their original situation and portions of the amnion accompanied the fetus as it moved to a new location. It had gained the peritoneal cavity where it acted as a foreign body and upon the surface of this mass, lymph was precipitated to form a dense, tough capsule. Where the amnion remained the precipitate was upon its exterior and the capsule adhered to the amnion while the latter was free from the hairs. Where the amnion had ruptured and the exterior of the fetus lay in contact with the peritoneum, the lymph precipitate surrounded and adhered to the hairs (wool).

The porcine fetuses are similar in most respects. Both are wholly devoid of amnion throughout almost their entire extent and consequently the fibrous-appearing, tough capsule is closely adherent to the hairs essentially everywhere, but there is a small mass of evident fetal membranes lying against the ventral portion of the abdomen. This mass is not adherent to the hairs but the tough capsule extends over this, adheres to it, and presses the membranes closely against the fetal belly. No umbilical cord can be found in either swine fetus but a long and patient search revealed an umbilicus with umbilic veins, etc., in the abdomen. The navel cord had been broken off and the wound lay hidden beneath a broad, transverse fold of skin. These swine fetuses correspond precisely with the canine fetus described by Hebrant except in two particulars, the fetuses were not teratologic (no monstrosity was present) and a very careful search revealed a navel and hence the prior existence of an umbilical cord. The following conclusions appear to me justified:

1. The canine fetus described by Hebrant and the ovine and porcine fetuses described by me were abdominal (extra-uterine).

2. They were not the result of abdominal pregnancy but may have been either ovarian, tubal or uterine. If the latter, the pregnancy was uterine but eventually, owing to rupture of the uterus, the fetuses became abdominal. If ovarian or tubal in origin they were extra-uterine, but not abdominal pregnancies.

3. The probabilities are that the fetuses named were the result of tubal pregnancies, the oviducts eventually rupturing from over-distension and the fetuses escaping into the peritoneal cavity, perishing immediately and gradually acquiring a dense capsule from a precipitation of lymph.

Control of Glanders in United States Army

Excerpt from War Department Circular, Number 264

PENDING revisions of Army Regulations, the following regulations relating to the before-mentioned subject are published for the information and guidance of all concerned:

1. Nature and Importance of Glanders

Glanders is a communicable disease to which horses and mules are peculiarly susceptible and is caused by infection with the bacillus mallei. It produces progressive disability, generally resulting in death, and is practically incurable. The ease with which one infected animal can transmit the infection to others by reason of the presence of the organism in discharges from the nose and mouth, and the extensive losses which it has occasioned in the past whenever animals in considerable numbers have been brought into close contact with each other, demand the adoption of extreme measures in the army to keep glanders under control.

2. Methods of Control

The important measures to prevent the appearance and propagation of glanders in a command comprise early diagnosis; prompt isolation and destruction of the infected animal and the sanitary disposal of the carcass; the application of thorough disinfection; and the quarantine, close observation, repeated examination and testing of suspects and contacts. There is no treatment for the infected animal other than prompt destruction. Hence the essential measure of control in all cases is a prompt and accurate diagnosis. The diagnosis is based on the clinical signs and the results of mallein or serological tests.

3. Clinical Signs

a. Veterinary officers should at all times be on the alert to detect the clinical signs of the disease, which are many and varied, necessitating frequent and careful physical examinations. The existence of an open lesion means a vast increase in the possibility of dissemination; therefore it is the constant aim to detect the infection prior to this event, for which purpose frequent mallein tests are utilized.

b. Whenever a positive clinical diagnosis is made the animal should be destroyed irrespective of what or how many tests it may have passed. It should not be held for further testing of any kind. Saturation of the system with tonic products in case of positive infection may be cause of failure to react to a mallein test. An animal with suspicious clinical signs should be isolated at once, kept under observation and given the tests hereinbefore prescribed until the presence or absence of glanders is definitely determined.

4. Glanders Tests

The difficulty in arriving at an early clinical diagnosis of glanders and the undesirability of awaiting the appearance of definite symptoms which are always a menace to well animals have led to the development of biologic reactions, the so-called mallein and serological tests. These tests are extremely delicate and within well defined limits are diagnostic. The mallein tests are field measures, applied and interpreted by the veterinary officers present with the animals. The serological tests require trained laboratory technicians and special equipment and are to be made at the laboratories of the Medical Department designated by proper authority.

The responsibility for a correct diagnosis lies primarily with the officer in attendance on the animal. He alone is in possession of all the facts and has knowledge of the local situation. The information furnished him by the laboratory is advisory in nature and should be given proper relative weight in connection with all other factors bearing on the case in forming an opinion.

5. Kinds of Glanders Tests

Two types of mallein tests are authorized, the ophthalmic and the intradermic. In cases of doubt following an intradermic test, laboratory serological tests consisting of the complement fixation and the agglutination tests are prescribed.

6. The Ophthalmic Mallein Test

a. The ophthalmic test consists of the instillation of ophthalmic mallein into the conjunctival sac and the interpretation of the reaction during the succeeding 24 hours. Its use is authorized only at the time of purchase because of the rapidity with which a definite decision may be reached. Every newly purchased animal will receive this test in case a

veterinarian be available. Animals are generally purchased contingent upon passing a negative test unless it is practicable to first apply and read the test. When purchased under this contingency, any reaction other than negative is a cause for rejecting the animals, which should at once revert to the owner for disposal under local sanitary live stock regulations. Consequently, retesting and serological tests following its use are unnecessary.

b. On the detection of a positive or suspicious reaction, all other animals from the same lot or stable will be regarded as contacts. Each lot of contacts should be segregated from all others. When it is impracticable to maintain the contacts in quarantine at the purchasing point, they may be shipped as a suspected lot avoiding contact with other animals. On arrival at a depot or other station, they are subjected to quarantine and testing like any other green animals but should be handled as a separate lot with special precautions because they are actual contacts. See par. 11c.

MINIMUM REACTION FROM THE INTRAPALPEBRAL TEST FOR WHICH HORSES SHOULD BE CONDEMNED

(Drawn by Capt. E. Houdamer, Assistant to the Chief Veterinarian of the French Army, During the War, for the Veterinary Corps, A. E. F.)

7. The Intradermic Mallein Test

The intradermic mallein test consists of the injection of mallein into the skin of the lower eyelid and the interpretation of the resulting reaction. It is the standard mallein test prescribed for general use in the army at all times excepting at purchase.

8. Reactions

a. A mallein test is followed by a reaction described as positive, negative or suspicious. A positive reaction means that, so far as concerns the test to which it refers, positive evidence of glanders infection was found, and a negative reaction means that no evidence of glanders infection was found. A suspicious reaction refers to an indeterminate condition presenting too much positive evidence from a given test to justify a negative finding and not enough to warrant a positive finding.

b. The disposition of an animal reacting to an opthalmic test is discussed in paragraph 6. An animal reacting positively to an intradermic test is judged to be infected with glanders and should be destroyed without delay. One reacting negatively is considered to be free from glanders. Animals yielding suspicious reactions or "suspects" are undetermined cases, to be held for retest and serological tests. If the results of these tests are not conclusive, the animal is held for further tests.

9. Retests

The term retest is applied to the injection of mallein into the skin of the lower lid of the untested eye not sooner than the 48th nor later than the 72nd hour after the primary in-

jection which has yielded a suspicious reaction. It constitutes a convenient check on the results obtained by the test.

The retest is applied immediately after the blood is drawn for the serological tests.

Omission of the retest is authorized only when the opposite eye is affected with a diseased condition which will interfere with the injection of mallein and interpretation of the reaction.

11. Resume

a. The successive procedure indicated when the primary injection of mallein yields a positive or suspicious reaction are as follows:

(1) The animal presenting a positive reaction will be destroyed without unnecessary delay and further testing or retesting of any kind. The same procedure applied to a positive reaction following a retest of serological test. The disposal of the carcass, the handling of contacts and the quarantine and disinfection measures to be adopted are such as are now authorized or may be authorized from time to time by the War Department.

(2) The animal yielding a suspicious reaction to the primary injection will have a specimen of blood drawn between 48 and 72 hours after the primary injection and immediately afterwards will be retested in the opposite eye The retest is made and interpreted precisely as is the test. Serological tests following a suspicious retest are not required. Should the retest prove suspicious and the laboratory report not clear up the case, the animal will continue in isolation for a period of 21 days from the date of the retest, and the entire program of test, collection of blood sample and retest will be repeated, thus continuing until a positive or negative opinion can be reached.

b. To summarize in the case of a suspicious reaction to a test:

(1) A positive retest, whatever the serological findings, or a positive serological test whatever the retest findings, establishes a positive diagnosis of glanders.

(2) A suspicious retest with suspicious or negative serological test or a negative retest with suspicious serological test continues the case as suspicious and it should be held in isolation for further tests.

(3) A negative retest with a negative serological test denies the diagnosis of glanders and justifies the release of the animal.

(4) It will be apparent that a negative serological test is not to outweigh a suspicious mallein test and retest combined, but a negative serological test plus a negative retest are considered as outweighing a suspicious test and warranting the release of the animal as free from glanders.

c. Animals presenting suspicious reactions will be tagged and immediately isolated. Until a diagnosis is definitely established, suspects and contacts with positive or suspected cases and their surroundings will be handled precisely as if the case were a positive one. Contacts should be tested at once, if not already done. If the suspect is eventually released as negative, the contacts should likewise be released, but the discovery of a positive or suspicious reaction amongst the contacts should be reason for further isolation and testing of the original suspicious case or cases as well as of all the contacts.

14. When Mallein Tests Are Required

A mallein test is mandatory—

a. At time of purchase, if a veterinary officer is present or available.

b. In case of newly purchased animals, immediately after arrival at any station or depot.

c. In case of newly purchased animals, before release from the 21-day quarantine which all such are required to undergo on arrival at any station or depot and irrespective of the result of the first test at the station.

d. In case of animals not newly purchased, at the earliest practicable date after arrival at any station unless tested within the preceding 21 days and there has been no subsequent exposure to the disease. Unloading at a public feed and rest station en route will be considered as exposure.

e. Before issue, shipment, turn in or transfer from any station or hospital thereat to another station or hospital thereat unless tested within the preceding 21 days.

f. Before sale to civilians, unless tested within the preceding 21 days.

g. Before turning in to a depot by an organization, unless tested within the preceding 21 days.

h. Before embarking on an animal transport unless tested within the preceding 21 days.

i. In case of all captured animals. Such animals will be treated as newly purchased animals under sub-paragraphs **b** and **c.**

j. In case of all privately owned animals, including officers' mounts allowed to enter a command, unless accompanied by evidence

satisfactory to the veterinarian of a negative test within the preceding 21 days.

k. On all contacts with clinical cases or with animals reacting positively or with animals reacting suspiciously.

l. On receipt at a veterinary hospital from another station, unless tested within the preceding 21 days, in which case they will be tested at the end of the 21-day period.

m. In case of any animal suspected from clinical signs, but not definitely determined to be glandered, irrespective of the date of last test.

n. (1) At least once every six months in the case of every animal not tested under any of the foregoing subparagraphs.

(2) So far as practicable, semiannual tests will be made during April and October of each year.

b. The veterinarian of a station or command is responsible for advising when a mallein test shall be undertaken or for the supervision of all its details. He will use any veterinary personnel available for this purpose, assigning the work of applying the test and interpreting it to officers selected for their suitability. He will so arrange the work that the officer who applies the test to one or more animals will, in so far as practicable, make all the readings for the same animals It is not contemplated that mallein tests will be made or interpreted except by veterinary officers or properly qualified civilian veterinarians.

c. Animals should not be allowed to remain untested for long periods. While the veterinary officer should always be on the lookout for suspicious cases and should test

POSITIVE OPHTHALMIC REACTIONS

16. Responsibility for Mallein Testing.

a. Under the general supervision of the department or corps area commander, all commanding officers and commandants of Reserve Officers' Training Corps units at educational institutions will require a semi-annual mallein test to be conducted by the station veterinarian where there is one, and to include all the animals at the station not otherwise tested under the provisions of paragraph 14 during the preceding six months. Commanders of stations having no veterinary officers assigned, including those directly under the War Department, will apply to the commander of the department or corps area in which their commands are geographically located for the necessary veterinary service to test the animals. So far as practicable the services of the veterinary assistant to the surgeon of the department or corps area should be utilized for this duty.

such individuals whenever in doubt, yet it is no excuse for not testing to state that there was no reason for suspecting the presence of glanders. The only real evidence for regarding the station as free from glanders is embodied in records of routine tests of all animals at the prescribed intervals.

d. The authority and co-operation of commanding officers is always necessary when wholesale tests are undertaken, since some interference with military duties is inevitable. The veterinary officer should make suitable recommendations to the commanding officer, advising the selection of such times for testing as are most convenient to all concerned and station commanders will afford such assistance as may be necessary.

e. When animals are issued to or by an organization in another command, without a mallein test by reason of military necessity or in compliance with these instructions as in-

terpreted below, a statement of the facts and showing the date and result of last test should be included in the health certificate (Form 101, M. D.) submitted by the veterinarian of the place of issue to the veterinarian of the place of receipt.

17. Glanders Autopsies.

a. All animals destroyed pursuant to a positive clinical diagnosis or as a result of a mallein or serological test will be autopsied in order to confirm the diagnosis if possible. A careful and thorough search should be made for characteristic lesions; if none are found this fact should be frankly reported. It may be difficult or impossible to demonstrate the presence of glanders by autopsy. Where animals are frequently tested, as is the case in the Army, the mallein or serological test often reveals the presence of the disease in its incipient stage and before glanders lesions are perceptible to the naked eye. Consequently such autopsies are frequently negative.

b. Whenever an animal is destroyed for glanders, specimens showing any pathological changes found at autopsy, irrespective of whether such lesions are considered positive, suspicious or negative, will be sent to the designated laboratory for examination. The specimens will be accompanied by a report containing the data required.

18. All instructions in conflict with the provisions of this circular are rescinded. (448.9, A. G. O.)

Studies on Periodic Ophthalmia in the Horse

By Augusto Bonazzi and Edward Merillat, Wooster, Ohio, U. S. A.

(Continued from June issue)

THE foregoing experiments and observation while lacking any revolutionary discovery have brought out a number of related facts which may prove of economic value. From these coupled together with information already well known and not herein recorded on account of lack of space it seems possible to outline a definite plan of management with at least more hope of success than formerly.

If it is remembered that the disease is very common in some districts and unknown or very rare in others and that mutations cure horses brought into non-affected areas and at the same time will make victims of well horses moved into regions where the disease is prevalent, the theory of infectiousness which has dominated all research until now, seems to be poorly grounded.

M. Jacobs, (An. rep. A. V. M. A., 1902) said "Horses and mules brought from a district in which the disease does not exist into one where it is prevalent very often become affected. Then, again, those already having the disease when taken to a locality where it is rare oftentimes become entirely cured." Since that early date and even some years before, we had already observed this fact and the special oberv̆ation of the last few years seem to make these early observations of Jacobs incontrovertible. Assuming this to be a proved fact, the disease is not infectious, because affected horses instead of spreading the disease when taken to areas where the disease does not exist, actually recover in a striking manner, either in the form of a complete restoration of the sight or by a delimitation to the damage existing when the patient was moved. This is probably best illustrated in the blue-eyed horse taken from the country into the city stable where the disease shows such a remarkable tendency to undergo arrest and where a continuation of the process to the point shown in figure 9 has never been observed by us. In the city a horse that suffers an attack soon after being brought from the country often makes a complete recovery or loses only one eye, while in the country the course is more often so insidious that it pursues its havoc first on one eye and then attacks the other without diminished severity until the intraocular structures are actually destroyed. In these damaged organs we find a bacterium, especially in the optic nerve and retina which seems to cause the damage but not the disease itself at the beginning.

We have endeavored to show that periodic ophthalmia is associated with a subnormal state of the body which we are inclined to believe is nutritional in character; (2) that the disease is manifested by a high intra-ocular tension, especially in the vitreous chamber, which actually tears the lens away from its normal attachments; (3) that the destructive process continues after blindness has supervened under the influence of a bacterium we have found to be

constant in the damaged tissues; (4) that the subnormal state produced by working horses too hard before they have been properly prepared by rationing and gradual exercise; (5) that the feed of horses in certain areas and farms lacks elements required to compensate for the enormous waste of the large muscular system of horses at hard work.

We are inclined to attribute the cause of periodic ophthalmia to environment, large muscular waste and improper balance of ration; to a nutritional rather than to an infectious origin.

The fact that the disease is stubbornly confined to given areas and even to certain farms where one or more of the causes we are inclined to incriminate is as much the basis of this conclusion as any of the research work we ourselves have made.

The disease is found on actual investigation to be most common where one or more of the following conditions prevail:

1. The soil was too acid to raise the high protein-containing legumes without the use of lime at least with each rotation of crops;

2. Work horses and growing colts were sustained a great part of the year on unbalanced roughage:—stalk-fields, oats, straw, timothy hay or inferior native hays.

3. Horses were given spurts of very hard work without what is usually regarded as proper preparatory workout.

4. The subjects were kept in dark, damp stables—bank barns with ground floors—where ammonia emanations contaminated the air. (Thus far we have made only a cursory study of actinic influences.)

It is incontrovertible that where none of these conditions exist periodic ophthalmia is a rare disease, and where a combination of them prevail the disease is rampant.

The point is illustrated by the difference in prevalence in two adjacent communities in Wayne county, Ohio. The one, a lime soil community, is free from the disease and when affected horses are taken into it they recover; the other, a shale district, is pestered more or less on every farm. Differences in severity can even be noticed on different farms—mild on one and notoriously severe and destructive on others.

The well bred trotting horse may be invoked to refute these conclusions, but thus far in each of our investigations on this type of horses there were always more errors in handling and management to which the disease could be attributed than in the common work horse.

In fine, under present condition on American farms, the ponderous body of a horse is built up on a roughage, corn or oats and water —a combination which does not meet the requirements of a beast subject to such a severe condition of life.

These conclusions are given with reservation and are not insisted upon, although they are at least in part confirmed by the fact that the only permanent cures observed by us or which have been reported by others, have been in horses wherein the causes we have incriminated have been removed.

Dry, well-lighted stables are essential and these should be kept clean; the ration should include grain and roughage of a proper protein content and hard work without adequate preparation should be avoided; and in districts where feeds are especially low in minerals and proteins these should be supplied in the form of legumes and mineral salts.

The affected horse should be treated by dilating the pupil with atropin, evacuation of the anterior chamber by appropriate and by feeding such minerals as coal slack, carbonate of lime, phosphate of lime, bi-carbonate of potassium, etc., together with red-clover or alfalfa hay in addition to the usual grain allowance of corn, oats and bran.

The authors express their thanks to Dr. Wm. Kinney of this city for placing operatory facilities at their disposal, and to the Ohio Agricultural Experiment Station for the use of their laboratory facilities.

A GOOD, CHEAP FLY REPELLENT

℞ Creolin (or any coal tar emulsion) .36 ozs.
Fish oil .....32 ozs.
Kerosene .....24 ozs.
Whale oil .....20 ozs.
Oil of tar .....12 ozs.
Napthalin ..... 8 ozs.
Laundry soap .....16 ozs.
Water q. s. .....10 gals.

The soap should be dissolved in enough hot water to assure a perfect solution and the napthalin in the coal tar emulsion and kerosene before mixing the other ingredients.

By soaking a sponge or cloth with this mixture and stroking it over the body of the animal in the direction of the hair a maximum of effect with a minimum of irritation is obtained.

It is never advisable to soak the skin with any active fly repellent owing to the erythema such applications always produce when repeated day after day.

Purely Practical

Dr. John Patterson says that anti-influenza serum is not a bad treatment for navel-ill of colts.

A packing of powdered potassium dichromate will render good service in the treatment of thrush of horses' feet.—Reed.

The American Railway Express recommends that hog crates should be bedded with sand. It prevents shipping casualties and is cool and clean.

A sixty grain tablet of naphthalin placed in a hen's nest will prevent lice infestation. Carry some in the Ford, and give it to the farmer's wife. It will make a "hit" both with the wife and hen.—Reed.

The most important procedure in the treatment of tetanus in man or animal, is the through dissection of all devitalized and infected tissue at the seat of the primary infection. Go well around it and deep enough to be sure to get it all, and see what a difference. —Wm. Bell.

In odorous sloughing or gangrenous areas of the epidermis and subcutis, powdered copper arsenite dusted over the area gives an improved appearance in a few hours time.—Reed.

A VERY PRACTICAL SUGGESTION

A common carpenter's apron is recommended by Dr. Wadley, an Iowa practitioner, as a mighty handy garment to wear while immunizing hogs against cholera. He places the serum bottle, equipped with filler attachment, in the left (nail) pocket, carries the hose around the neck and attaches it to the two-way stop cock of the syringe. The virus syringe goes in the right lower pocket, the virus bottle in upper right hand one, and a small viol of tincture of iodin in the upper left.

This arrangement enables the operator to move about from place to place with his whole outfit always at hand and to do much cleaner work than where these paraphernalia are strewn about, often in places difficult to keep clean.

One fourth drachm doses of mistura cantra diarrhoeum N. F. is very useful in diarrhea and dysentery of foals and calves.—Reed.

Placing a one grain tablet of quinine and urea hydrochlorid under the upper eyelid will give relief in painful eye affections. The effect will last for several hours.—Reed.

In canker of the ear in dogs, especially chronic tenacious cases, will ofttimes respond to a good swabbing with the following: formalin, one drachm, and glycerine, one ounce, applied every third day.—Reed.

To stimulate the delayed action of purgatives Quitman recommends the following prescription:

℞ Fluidextract physostigma ..... 1 oz.
Fluidextract nux vomica..... 6 drs.
Fluidextract colchicum .....12 drs.
Water q. s. .....12 ozs.

Met Sig. Give one ounce every two hours for horses, one and a half to two ounces for cows and prorated doses for small animals.

SIMPLE ENOUGH

H. A. Quinn of the Ft. Dodge Serum Company says: To drench a hog easily, cut a hole at the toe of a lady's shoe, and after holding the pig up by the fore legs just put the toe of the shoe in the mouth and pour in the dose; and to physic a hog put one or two compound cathartic pills in a "OO" capsule and fire them into the throat with the capsule gun.

TWITCHING THE COW

A cow can be subdued with a twitch quite as effectually as a horse but in the case of the cow the twitch must be put on the tail according to information from Dr. George Albery of Monticello, Iowa. Albery's cow twitch is made with a round stick two feet long with the loop in the middle instead of at the end. Two holes are bored an inch or two apart at the middle and the loop made by passing the rope through them. The loop is passed over the tail to the butt, turn up tight and pulled on in the backward direction. It is said that cows thus confined will stand for any ordinary operation about the body especially for ovariectomy.

Cattle Practice

Edited by JOHN FRANCIS DE VINE, D. V. S.

Professor of Bovine Medicine, New York State Veterinary College at New York University, New York City.

Pertinent Comparisons Between Equine and Bovine Sterility

HAVING covered the salient points of the present information on sterility of cattle in a series of articles written for Veterinary Medicine during the past two years, the cattle department for the next few issues at least will be devoted to brief discussions of some of the ordinary ailments of cattle, being directed largely by inquiries addressed either to me personally or to the Journal as a guidance to that which would interest the practitioner most.

My article this month will be in the way of answers to three questions that have come to my desk within the past ten days. The first concerning sterility of mares at a breeding establishment.

Paradoxical though it may seem and notwithstanding that horse breeding had been studied scientifically for centuries before any extensive interest was given to the subject in cattle; literature on sterility in mares is very meagre and unreliable as compared with that on cattle breeding with reference to pathological conditions. There are, perhaps, reasonable explanations for this.

1st. There has been much careful attention given to hygienic breeding of mares and stallions and guarding against infection.

2nd. Possibly the genital tract of mares is less susceptible to the same character of infections as those that cattle so frequently suffer from; that it has made the problem of pathological study of much less importance.

3rd. Mares are not so easily handled and do not respond nearly so promptly to treatment as do cattle with the result that many very able men have become thoroughly discouraged in the matter of treating barren mares and volunteer the opinion that results are so unsatisfactory as not to warrant it.

The latter has the merit of some truth, but is not wholly so. Any one who has examined many mares that are irregular breeders or have been barren for years will testify that there are two conditions that they meet with most commonly.

One is the peculiar form of pyometra which should be studied and which I hope to give some attention to in the near future. It is not the thick, creamy, pus type that we find in the cow but a sort of catarrhal, mucopurulent, offensive exudate often in a sufficient quantity to bear the uterus down out of line and which is very difficult to clean up and bring the uterus back in tone and normal position again.

Sterility Most Common in the Lighter Breeds

The other condition is enlarged ovaries, usually fibrous in character and may or may not be complicated with cysts. The treatment of either cystic ovaries or pyometra in the mare is far more tedious and discouraging than in the case of the bovine. Nearly every mare that I have examined and found to have fibrous ovaritis, has had the history of having been trained and my records give positive indication that there is much more breeding trouble among the thoroughbreds and standardbreds than among heavier mares and that in the latter, uterine trouble is fully as prevalent as ovarian trouble. As I see it, training and particularly early training of the thoroughbred and standardbred mares has an effect on the metabolism of the ovary, similar to heavy protein feeding in the bovine. In the case of the bovine I am fully convinced that undue confinement and liberal protein feeding both in youth and later under advanced registry conditions have a positive influence in producing ovaritis and cystic ovaries. In the case of the trotting and running horse, training for speed apparently disturbs the circulation of the ovaries. At least I have never yet examined a thoroughbred or standardbred mare that had been subjected to considerable training that had two normal sized ovaries. In

fact, it is not an uncommon thing in every case to find one or both ovaries from two to five times the normal size, hard and extremely sensitive. This is not so with the draft breeds.

Mares More Difficult to Handle than Cows

I mentioned above that the handling of mares is not so simple or satisfactory as cattle. In the case of ovaritis in the mare, particularly the large sensitive ovaries, it is entirely out of the question to apply force or pressure enough in massaging them to make any material impression by one or two massages. Whereas, in the cow in the case of cystic ovaries, ovaritis or cystic degeneration of the ovaries, every manipulation gives very positive results because we can apply long and thorough massaging with the result that the ovary perceptibly softens after each massaging and it is possible in at least 99 per cent of the cases to crush all superficial cysts that may be present. In the case of cystic degeneration, by applying all the force of the first finger and thumb some of the deeper cysts may be ruptured the first time the ovary is massaged. But if not, by using much pressure, after two or three massagings some five or six days apart, the circulation will be excited so as to make it possible to dislodge any deep cysts or cystic corpus luteum that may be encapsulated. The same condition in the mare would require perhaps six months treatment because the animal cannot withstand the pain that is occasioned by pressure and the hands of the operator soon become fatigued, owing to the awkward position that the location of the ovaries occasions.

Again, in the case of pyometra in the cow, if there are no adhesions, the tubes in good condition and the uterus is emptied by syphoning it out and perhaps cleansing with a saline solution a few times and then massaged, in the majority of cases the uterus begins to involute at once and regain its normal texture and position very promptly, perhaps in two weeks. While in the mare the whole organ seems to suffer more from even a slight pyometra than the endometrium of the cow does, not the tendency to fibrosis but a lifeless condition which requires repeated and persistent douchings and perhaps a variety of stimulants or irritants to check the secretions and to tone up the organ. Among some of the things that we have found useful to irrigate with is a mild alkaline astrigent composed of sodium chloride and permanganate of potash. If the condition is accompanied with an irritable disposition and evidence of constant estrum, filling the uterus with camphorated oil every three or four days for a few times, may give splendid results. Other cases may need to be douched with a two or three per cent solution of lugols. Even this may not irritate sufficiently to stimulate uterine reaction and the uterus will sag in its half-dead kind of way. In those chronic cases we have even resorted to swabbing with pure iodin and again others seem to respond best by dry treatment such as packing with gauze, dusted with bicarbonate of soda or boracic acid. Occasionally all this irritation will affect the soft cervix, which is so characteristic of the mare. In that event, it is well to protect it with soothing, mild ointments or if necessary, smear some ointment on some gauze and plug the cervix.

Notwithstanding these apparently erratic and discouraging variations, I wish to emphasize the fact that mares rarely suffer from the fibroses and adhesions that cows do and unless out by age or there is some unusual pronounced pathological change in the genital organs, many barren mares will respond to treatment. Breeders of thoroughbreds and standardbreds are learning that they have sacrificed in the past some great brood mares that probably could have been relieved of their infirmities.

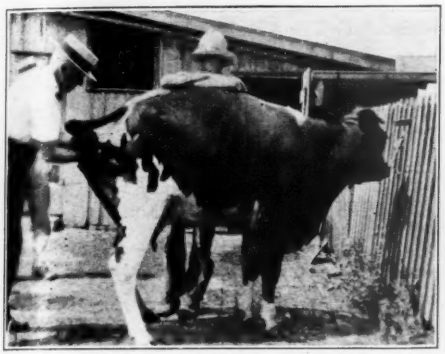
Last year in conjunction with my colleague, Dr. F. A. Wehle of Lexington, Kentucky, we restored to breeding usefulness several world noted standardbred and thoroughbred mares, one, which had been repeatedly bred unsuccessfully for four years, conceived on first service after treatment. Two of these mares, seven and fourteen years old respectively had never had a foal. Our experience would indicate that we may expect about 75 per cent success in young mares with enlarged ovaries if the uterus and tubes are not seriously diseased, irrespective of their history. The number of old mares that have been barren for a long period; say, five, six or seven years, that respond to treatment is all together too small to warrant a favorable prognosis in a high percentage.

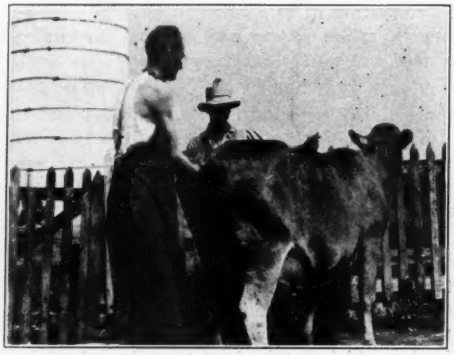
Where the animal cannot be frequently examined and consistently and persistently treated metritis bacterins mixed and uterine capsules will often clear up cases of chronic endometritis and pyometra in the mare where the value of the animal does not warrant too

much expense. In fact, this is a very practical way of treating most mares that have but ordinary farm value.

Cervicitis in the mare differs materially from the hard cervix in the cow. It is usually manifest by a soft dilated cervix. Its handling is the same as for endometritis and as a matter of fact is so associated with it that it is customary to treat the endometritis, which automatically involves the treating of the cervix.

MANIPULATIONS OF THE GENITAL ORGANS PICTORIALLY DESCRIBED





When a cow arches her back, the organs cannot be successfully examined, but by pressing upon the dorsal spines with a hard blunt instrument like a closed pocketknife, the back goes down and the organs fall into their normal position, where they can be systematically explored.

And if the organs are carefully handled, there is not much resistance offered thereafter, even when the ovaries and the cornua are drawn back into the pelvic cavity, for further manipulation.

Fifty to sixty cows a year are all a mature bull should be allowed to serve. Young bulls should be limited to much less than this number and no bull should be made to serve a cow twice in succession. A single service is sufficient.

By the application of a saturated solution of sodium thiosulphite to your arms and legs before going camping or fishing the discomfort from "chiggoe" bites will be prevented. The solution should be applied once daily while exposed.—Reed.

FATAL MASTITIS IN COWS

Some time ago I had a cow patient develop mammitis in all four quarters a few days after parturition. The udder was as big as a four gallon bucket and it was impossible to milk out any of the coagulated milk. There was rapid pulse but no fever. I ordered hot water application to be applied every half hour, vigorous massage, and last thing at night a drying oil consisting of camphor and olive oil. I also gave a saline physic and ordered restriction of feed and water. The cow died in two days.

A year ago I had a similar case after parturition, but with high fever. In that case I also tried antiseptic injections, but the amount of caseated milk I could wash out did not justify the time and labor involved. This case also proved fatal.

What I wish to learn is: (1) Are those cases of mammitis occurring immediately after parturition in all four quarters always fatal? (2) Was there anything the matter with my treatment? (3) Now if those cases often prove fatal would it not be best to make a bold incision into each quarter and wash out all caseated material and inflammatory products and thus save the life of the animal and then fatten her for beef or keep her till next lactation period? (4) In case of the last alternative, if wounds are well healed, would she give enough milk to justify the expense of keeping her over?

I have been in practice only a few years and cases that may look simple to you cause me much worry.—O. W. J., Wash.

Reply: 1. Severe mastitis occurring immediately after parturition is very often fatal, unless given very prompt treatment. If the revulsive action of a quick acting purgative fails to check the course of the disease the patient is generally doomed, either to a fatal ending or complete destruction of the gland, sinus and ducts.

2. Your treatment lacks active purgation. A dose of eserine followed with either saline or oleaginous purgation is essential at the very beginning. We also believe in formalin internally; although this agent is less popular than formerly, we are giving it up slowly on account of the good results observed in many bad cases. We give it in two dram doses with oil three times a day. Then a mixed bastitis bacterin is always indicated. S. L. Stewart places great stress on supporting the udder with a sling.

3. When the contents of the sinus can not be milked or siphoned out as is so often the case, lancing the sinus is justified. It often saves life and many times also saves the glands from destruction by the inflammatory process.

4. If the damage of the inflammatory process is not too great there is hope of conserving the animal as a milk producer.

PREGNANCY AT THREE MONTHS IN A CALF

A Jersey heifer calf was born on May 12th, 1921, and with a male calf near its own age was turned out to pasture during the summer. On May 17th, 1922, I was called to attend this calf which was then one year and five days old and found she was about to give birth to a calf when I arrived. To me this is interesting as I had never attended a bovine mother so young. She was only as high as

Is This the Youngest Bovine Mother on Record?

my hips, and I am not a giant. Her horns were only as long as my fingers and she had a typical calf's head. She weighed about 400 lbs. and her udder contained about a gallon and a half of milk. The teats were about one and half inches long, and her calf—a heifer—was of medium size, both mother and calf are doing well. The owner is Wm. Pea, Decker, Ind.

Floyd Gilliatt.

According to Hoard's Dairyman, one third of the dairy cows of this country yield a profit, one third pay their for the feed consumed and the other third are just parasites.

Swine Practice

Edited by A. T. KINSLEY, M. S., D. V. S.

Sterility, an Important Swine Breeding Problem

THE importance of the swine industry of a country increases in a direct ratio with the increase of population. In order that this industry maintains its present economic relation it will be necessary to increase the production of swine. When production is increased in such animals as swine there is a greater necessity for efficiency, not only in the matter of economic production but also in the control of disease. There are many problems in the breeding and general management of swine that will require a more careful consideration and their solution will be of great economic significance.

One of the most important problems of the swine husbandman is the comparatively small production resulting from abortion and sterility and from the excessive loss of small pigs. Abortion, slow breeders and sterility are common in swine, and there has been an unusual loss of pigs in the central states that was due to some disease of the genital organs of the sow; although the boar was, no doubt, a factor in many cases. Abortion was very prevalent but the pig losses were not all due to abortion. Veterinarians are being consulted by swine breeders for practical information on breeding problems as it is being realized that a greater efficiency in production is an actual necessity.

Some breeders, becoming discouraged, have discontinued the breeding of swine. Many of the breeders of grade stock fatten and market the sows that failed to produce and raise reasonably large litters. One of the most important problems of the swine breeder at this time is sterility.

Common in Primaparae

Sterile and slow breeding boars are much more common than is usually suspected. To attempt to estimate the extent of sterility in sows would only be a guess. There has been an effort made to obtain definite information as to the prevalence of sterility but the datum collected thus far is not sufficient upon which to base a definite statement. The condition is, it seems, equally prevalent in all breeds. It is probable that more sows become sterile after the first litter, normally farrowed or aborted, than gilts or older breeders. Some farms, carefully surveyed, have shown 50 per cent of the sows sterile. In other instances only a small proportion of them are non-breeders. It is an exception to find a herd of 15 or more sows that are all breeders. Sterility in sows is more or less prevalent in all sections of the country but it would appear from the available information that it is most common in those districts where swine are extensively produced.

Causes of Sterility

Many practitioners contend that sterility is more common in young boars than in the mature animal.

An occasional case of sterility occurs in gilts or boars as a result of improper development or malformation of the genital organs. Inbreeding long continued may be a factor. Insufficient exercise and overfeeding is also a common cause in gilts.

It is probable that the most important factor in sows is the influence of previous disease. Infections of the genital organs that produce abortion frequently bring about changes that produce the sterility.

Abortion following swine influenza and hog cholera, with secondary infection of the uterus may result in sterility, and diseased ovaries no doubt is also an important factor.

The non-breeding or sterile boar usually arises from injury of the genital organs. Such injuries may be due to mechanical interference, but is more frequently the result of excessive use or abuse. Small litters and those litters of low vitality can frequently be attributed to pasture breeding or excessive service.

Symptoms

As the syndrome in sows is common knowledge it is sufficient to state that sterile sows

may or may not evidence estral periods. In some the estral interval is regular, in others irregular and an occasional one is in heat continuously. A persistent purulent discharge indicates vaginitis or metritis. There may be a pyometra or purulent collection in the horns and tubes.

Sterile boars may show disease or defects in the testicles. Boars with diseased genitals are usually unthrifty and exhibit more or less disturbance of locomotion.

Prophylactic Measures

The production of swine can be increased by observing the primary principles of feeding, sex hygiene and sanitation. Breeding swine should not be given a fattening ration but should be provided with a properly balanced maintenance ration. It is probable that some of the recent pig losses occurred because corn and water constituted the ration. Ground oats or barley and semi-solid buttermilk is a splendid food for breeding sows or boars in service. The mineral ingredients in food stuffs vary but since it appears that all food stuff is deficient in essential minerals, it is advisable to use mineral substitutes, particularly in breeding animals. The addition of mineral substitutes to the feed has apparently prevented rickets. Some investigators report an increased milk supply in sows provided with mineral foods.

Inbreeding and line breeding are of value in fixing some pecularity of the breed but should not be carried to the point of diminishing vigor and vitality. Breeding swine should not be kept in small pens but should be so managed as to give them forced exercise. Excessive use of the boar may cause orchitis which will diminish the vitality of the sperm cell and may destroy them. Boars should not be permitted to run with the sows during the breeding season as this favors excessive service of the boar. A boar running in a lot with sows was recently observed to do twelve services in one day. All breeding should be done in a small pen and after one service the sow should be removed. A young boar should not be permitted to do more than one service every other day and a mature boar one service each day. The excess service in pasture breeding is probably responsible for many of the small litters.

Recent aborters or diseased sows should not be bred until all evidence of disease has disappeared, and all aborters or other diseased sows should be segregated and handled to prevent the spread of the infection.

The Value of Treatment

The important question from the breeders' viewpoint is: Shall the aborters and apparently sterile sows or boars be retained? An intelligent reply involves a consideration of several factors. If a sow is a good individual then it is worth while to attempt to overcome the infection of the genital organs and prevent sterility. In attempting such treatment the sow should be isolated and the proper ration as previously indicated should be provided.

The bacteriologic examination of the diseased genital organs and the discharges from the same has revealed a variety of microbes. The occurrence is fairly constant. As many practitioners have reported favorably on the use of one or more injections of a combined bacterin made from the microbian invaders, it seems justifiable to recommend its use in conjunction with carefully applied douches of non-irritating solutions. Sterile salt solution is preferable. Douching is done most effectively by placing the sow in a crate and raising the front end enough to get the advantage of drainage. The uterus should be well drained of all irrigating fluids at the end of each treatment. The proportion of sterility in aborters given the above treatment is very small and the expense of treatment is not prohibitive.

Treatment should not be recommended for aborting or sterile sows that are not good individuals. Such sows should be fattened for the market. The treatment of sterility in sows involves many different problems. In some cases this condition has been corrected, according to reports from practitioners by providing a properly balanced ration and particularly the addition of mineral substitutes. This method of treatment will produce results only in those cases in which there is little or no alterations of the genital organs. The cases of sterility caused by infection of the uterus may be overcome by the treatment suggested for genital infections succeeding abortion. Sterility resulting from cystic ovaries or similar conditions can be overcome, in some cases, in large sows, according to Otey by manual manipulations. Dr. Otey describes his method of procedure as follows: "The sow is placed in a crate and confined by tying in such a way that she can not move. After lubricating my arm with soap the hand is passed very care-

fully into the rectum. My hand and arm are small and I do not attempt to treat any animal that weighs less than 400 pounds. As the wall of the intestine is very tender and is easiiy punctured, care should be exercised in grasping the ovary. The left ovary is manipulated with the right hand and the right ovary with the left. Ovarian cysts are ruptured in the same manner as in the cow." Cystic ovaries may also be treated by making an incision in the flank but this method is too radical to be advised except in extreme cases.

Sterility in swine offers the Veterinarian the opportunity to render the swine industry a valuable service. From the available information it appears to be more economical to prevent or treat abortion and sterility in sows that are good individuals and breeders, than to depend upon the gilts each year for pig production.

Diseases of the Mammary Glands

THE mammary glands of sows are modified skin glands that supply food for the new born. There are from ten to twelve distinct glands arranged in two series on either side of the middle line. Each gland is complete itself, and has one distinct teat with one or more openings. Inflammation or other diseased condition may affect one or several of the individual glands. The location of the mammary glands in sows predisposes them to injury and infection of various kinds. Tumors also frequently occur in these glands.

Mammary gland disturbances generally occur at farrowing time or when the pigs are weaned.

Catarrhal Mastitis

Mastitis is a relatively common condition. Catarrhal mastitis is a simple form of inflammation and involves the mucous membrane primarily. This condition is very common in sows but fortunately it is not very serious. The usual cause of catarrhal mastitis is retention of milk and occurs most frequently in sows that have lost their pigs or at weaning time. This form of inflammation usually affects several or all of the glands simultaneously. It is manifested by enlargement of the glands. They feel doughy and dense and usually hot and rather painful. A stringy ropy milk may be forced from the teat.

Catarrhal mastitis can usually be obviated in sows that lose their pigs by milking small quantities from each teat for a few days and reducing the milk producing feed. It can usually be prevented in sows during weaning time by proper regulation of the diet. The treatment of sows affected with inflammation of the mammary glands is usually not difficult. The first procedure is to remove the cause. The patient should be given a laxative or purgative and if the inflammation is severe the gland should be massaged and hot and cold packs alternated.

Parenchymatous Mastitis

This type of inflammation is not very common in sows. It is most frequently caused by injury, although infections may be the primary cause. It is usually confined to one gland which will become swollen, hot and painful. In some cases the affected gland is so painful that the animal will not lie down, she will usually not allow her pigs to nurse and will frequently shift her position. The milk from the affected gland is usually ropy and it is not unusual to find a rise of temperature and inappetence. In the early stages this condition can be relieved by the application of hot and cold packs. If treatment is delayed abscess formation may occur. This may destroy the gland tissue. Abscesses in the mammary gland generally appear as nodular masses varying in size up to that of a base ball. The nodules are usually dense and hard and may or may not be distinctly circumscribed. In some cases, multiple abscesses occur within the gland. Unless surgically interfered with, it is rare for the abscess to rupture and discharge as the wall is usually so dense it remains intact.

Mammary abscess should not be mistaken for abscesses located beneath the skin and outside of the gland tissue. The latter form of abscess can be distinctly outlined by manipulation and are easily removed by surgical interference. The treatment of abscess within the gland usually necessitates destruction of the gland and the most satisfactory method of relief consists in the removal of the entire gland, which is not a serious operation when the animal is properly prepared and the wound properly treated.

Mammary Actinomycosis

Mammary actinomycosis is common in sows in some sections of the country. This condition is caused by the actinomyces which very probably gains entrance through abrasion of the skin. Abrasions of the skin are common mammae particularly in sows pasturing on stubble fields. Actinomycotic infection usually results in abscess formation. The mammary actinomycotic abscess corresponds in general appearances and structure to actinomyces of other tissues. The lesion is usually slow in developing and by this means can often be distinguished from ordinary mammary abscess.

It is not uncommon for the actinomycotic lesions to erode the tissue and discharge to the outside. The only successful method of treatment is ablation of the gland. If a diagnosis can be made before suppuration is established the internal administration of potasium iodide is helpful.

Tubercular Mastitis

Tuberculous mastitis is not at all uncommon in swine. The condition is caused by infection with the tubercle bacilli, usually of bovine origin. Tuberculous infection of the mammary gland is of slow development. The affected gland will be more or less nodular, although the enclosed capsule will not be dense. The diagnosis can be confirmed by the tuberculin test. Sows found to be affected with mammary tuberculosis should not suckle pigs because of the danger of transmitting the infection. If pigs have suckled a sow that is found to be affected with mastitis and are to be used for breeding purposes, they should be given the tuberculin test within three months, and the reactors destroyed. Other types of abscess and inflammatory new growths may occur in the mammary glands of swine. It is not uncommon to find large masses containing fistulous tracts with pus of varying consistency. These abscesses are always due to the same type of infection.

Fibrous masses as large as a football containing fistulous tracts have been observed. These large growths interfere with the movements. They usually involve only one gland and can be safely removed when the operation has not delayed too long.

Tumors may also occur, although they are not as common as in the mammary glands of some other animals.

From the foregoing, it will be noted that there are a variety of inflammatory disturbances that may occur in the mammary glands of sows and that the majority of these conditions are not difficult to overcome if treatment is instituted in the early stages. The value of a breeding sow through loss of a single mammary gland is only diminished to the extent of suckling one pig less. From general observation the packing centers, it would seem advisable that veterinarians be called upon more frequently to treat mammary disturbances of sows, as such a practice would be economical for swine producers.

Comment: Case reports on mammary diseases of swine are very desirable.—Ed.

IS THE OILY FAT OF PEANUT FED HOGS HEREDITARY?

Whether the soft oily fat of hogs feed on peanuts is a tissue quality that can be inherited and that might persist in offspring regardless of the nature of the ration they themselves receive is a question that will be solved experimentally by the United States Bureau of Animal Industry on the experiment farm in Maryland.

Eight gilts will be grown on a peanut ration from the time of weaning until they farrow their first litter, then the progeny beginning at weaning time will be fed a hardening ration—corn and tankage, and these will be checked with pigs whose dams were fed hardening rations instead of peanuts during the period of growth and gestation.

Observations will be made when both the experiment and check pigs are grown and finished for market by noting the difference, if any, in their carcasses.

(Ext. Clip sheet, U. S. Dept. Agr.)

Soft pork produced by a peanut ration can be obviated by feeding corn and cotton seed meal for the last thirty or forty days of the fattening process.

Further investigation on bacterial infections and bacteriophage may reveal a relationship of the B. suipestifer and the filtrable virus of hog cholera.

Fiileborn reports the finding of ascaris larvae in the kidney and brain. He assumes that they are carried to these locations by the circulation. No visible symptoms result from the invasion of the brain or kidney by these parasites. Hemorrhages may occur as a result of their presence in the kidney.

Laboratory Diagnosis

Edited by C. A. ZELL, D. V. M.

SWINE ERYSIPELAS

A sow weighing about 250 lbs., purchased on the Kansas City market and slaughtered in one of the local abbattoirs, attracted the attention of veterinary inspector, Dr. Jos. W. Parker, who reports his observation as follows:

"Lesions: Skin showed extensive reddened areas varying from one-half inch to a foot in diameter on the shoulders, back, hams, legs and head. The skin of these areas was thickened and raised. There was evidence of superficial necrosis in a few of the smaller areas. The subcutaneous tissue, in the affected areas, was intensely inflamed to a depth of one and a half inches.

"The lymph glands were intensely congested (possibly hemorrhagic). The spleen was engorged, enlarged and firm. The splenic enlargement was apparently due to increased size of the Malphigian bodies.

"There was a muddy appearance of muscular tissue and all parenchymatous organs. A provisional diagnosis of swine erysipelas was made."

ACTINOMYCES BOVIS FOUND IN BUTTER

This butter was made from the cream of a Jersey cow, four years old, and freshened seven months ago. Physical examination of the cow shows no organic disease and the milk and cream seem to be normal in appearance.

When it was attempted to turn the cream into butter it took about four hours and yielded a peculiar slatty color shown in the specimen. On melting it was found that it yielded a grayish green sediment at the bottom of the dish.

The cow has been fed a good quality of hay, with bran, cornmeal, and oats as the grain ration. The water is city tap water. If you can help in diagnosing this cases, I shall appreciate it. Would tuberculosis cause such a condition?—C. M. M., Me.

Reply: Tuberculosis is not the cause of motley butter, and while we are unable to state the exact cause of the trouble in the specimen, we strangely enough, found typical colonies of the ray fungus in the specimen, which in view of the fact that the udder and teats of the cow are in a normal condition, would indicate that there is an extraneous infection of the milk itself.

AVIAN TUBERCULOSIS

We are sending you a chicken by parcel post that comes from an infected flock. The owner says he has been losing chickens for the past four years. I am enclosing a written report from the owner for your information, as follows:

"I have been pestered with this disease in my poultry for four years, three or four chickens at a time lose thriftiness, sit down as though their legs were weak, and stand up but little. In the last stages they do not walk at all, and lose their appetites. They stay on their roosts late in the morning and retire early. Our losses have always been greater after the heavy laying season and we have never lost a pullet. The year old hens are the only ones to contract the disease, and none of them ever recover. I have tried all kinds of medicine but the only results were greater losses than ever. I also practiced sanitation without results.

"The hens live from four to six weeks, and strange to say those that stay around the barns during the summer months, never have the trouble, while those that remain around the poultry house and yards are more susceptible. I feed oats, ground oats, and corn, and wet mash and tankage, with some boiled meat. I have changed flocks twice, but in each case, after ten or twelve months, the disease appears among the new flock."—L. A. D., Ill.

Reply: Bacteriological examination showed many typical tubercle baccili in the specimen sent. They were especially numerous in the liver. This flock of chickens is tuberculous, and the reinfection of the new flock purchased is due to the fact that the source of infection has either not been determined or else that your client has purchased chickens from in-

fected flocks. There seems to be need here for a very thorough and systematic cleaning up the establishment, and the rebuilding of the flock from tuberculous-free replacements. This could be done by testing with avian tuberculin or through some degree of assurance that the newly purchased chickens originate from healthy flocks.

A RARE TYPE OF MALIGNANT TUMOR

I am sending you a tumor removed from a ten year old mule. It was located on the costal surface over the 15th, 16th and 17th ribs. The inguinal glands were enlarged and endurated. The tumor was removed 18 months ago, but recurred. Please examine and report your findings. My clinical diagnosis is sarcoma and my prognosis doubtful.—E. H. W., Tenn.

Reply: Microscopic examintion of sections of this tumor proved it to be a very rare neoplasm. It is an xanthoma, a tumor on the order of the melanosarcoma, with the difference that it contains a yellow pigment instead of the black one that is found in melanotic sarcomas. The tumor is malignant, the prognosis should, therefore, be unfavorable.

CHOLERA IN CHICKS

The chicks I am sending you are two of 125 chicks hatched in an incubator, April 28. No trouble has appeared on these premises in any previous hatches this Spring, although a considerable number died during the Spring of 1921. They hatched well and were started on a prepared moist food. They began dying at two days old and at this writing (three days later) all have died except 20, making a total of 105 dead in three days. The eggs were purchased from a flock which were infected last year, but there is no history of trouble in that flock during 1922.

I prescribed sulphocarbolate of copper, lime, soda, and zinc, to be given in the first water they drank, all without any beneficial results.—A. R. K., Ill.

Reply: The numerous typical bipolar organisms of chicken cholera found in these chicks show without doubt that the trouble is chicken cholera. Immunization and proper sanitary measures is the treatment to prescribe.

In a series of experiments, Sheather has shown that tubercle bacilli obtained from infected cattle in India are less virulent than those obtained from European tuberculosis cattle.

SUSPECTED RABIES

I am sending by express the brain of a hog, which I believe died from rabies. It lived less than 24 hours after the first symptoms appeared. The animal was very nervous, had a temperature of 105° F., and would squeal when it heard the least bit of noise, or when attempt was made to handle it. There was more or less paralysis apparent. This animal was a boar one year old. A sow showing the same symptoms died at the same place a few days before.—J. C. M., Iowa.

Reply: As the brain examination does not show any Negri bodies, we cannot make a diagnosis of rabies, and since the hog was only sick for 24 hours, it is very doubtful if rabies was the cause of death. It would, however, be advisable to inoculate some experimental animals with parts of the brain to verify this conclusion.

NECROBACILLOSIS OF THE THROAT OF A CALF

A client of mine is sending you a specimen of a calf one month old, from a herd of Herefords. He loses a few calves from this disease every spring and says that all of them are affected in the same way.

The symptoms are: loss of appetite, labored breathing, slight rise of temperature, but no external swelling in the region of the throat. Tracheotomy relieves the labored breathing. Is this calf diphtheria?—H. H. S., Ill.

Reply: The examination proves that your diagnosis of calf diphtheria is correct. The mucous membrane of the larynx and trachea is covered with a fibronous exudate and the typical coagulations. Besides the bacteriological examination showed the presence of a B. necrophorous.

BACILLUS PULLORUM FOUND

I am sending you two chicks for examination. The chickens of this flock lose their appetite, and in a few days they cannot stand or walk, losing the use of their legs. Later they develop diarrhoea and die. They are kept in a good warm place, with a ground floor and under good sanitary conditions.—N. E. P., Ind.

Reply: The bacteriological examination of the chicks showed not only the bacillus pullorum but also streptococci and staphlycocci, which would indicate you are dealing with a mixed infection, with probably the bacillus pullorum playing the most important role.

Abstracts of Foreign Literature

Edited by A. EICHHORN, D. V. S.

THE PREVENTION OF TUBERCULIN REACTIONS BY SERUM, TRANSUDATES AND EXUDATE

The admixture of any kind of transudate, exudate of blood sera to tuberculin prevents a reaction which would otherwise appear upon application of a cutaneous or subcutaneous tuberculin test. This manifestation is attributed to the colloidal contents of the mentioned fluids. It is physical and not biological. The author succeeded in suspending the reaction with any kind of other colloid. For instance with iron. The colloid contents acts similarly as animal charcoal. The mixing of animal charcoal and tuberculin has also a tendency to diminish or entirely suspend the specific tuberculin reaction.

FROM THE PRACTICE ON THE EAST COAST OF SUMATRA

A peculiar skin affection and stomatitis in goats. A goat showed a severe skin affection on the lips whereas the buccal mucous membrane disclosed an ulcerating surface. The picture resembled Framboesia of man and as a matter of fact numerous spirochetes may occur in the mouth of healthy animals. The intravenous injection of salvarsan resulted in the recovery in eight days. Later, however, the author observed spontaneous recoveries and noted some cases of the disease without complications. In these cases he noted warts on the shin and on the face, on the outside and inside of the lips. In the latter case sometimes bleeding ulcerations. This disease occurs among goats on the East Coast of Sumatra in an enzoatic form.

Wounds on cattle inflicted by the claws of tigers are quite frequent. These infected wounds are always of a very serious nature being accompanied by great swelling, at times with gas formation. The treatment consists of incisions and counter openings and irrigation with warm solutions of creolin.

A peculiar affection of the horns occurs in work oxen. The horn loosens and finally drops off. The base of the horn is hot, painful and swollen. The bone contains a cauliflower-like proliferation. This reappears even after radical operations. They found that the tumor is not of a malignant nature but that it represents a strongly proliferating periostitis of the bony process of the horn. According to Briburg the cause is of a tromatic nature and probably an incomplete fracture of the base of the horn which in want of rest does not heal but results in a chronic process with softening of the bony substance and losening of the horn.

Gangrenous choryza in cattle. A cow had severe gangrenous inflammation with ulcers on the nasal openings, ulcers on the nose and lips, small and large exoriations in various parts, gangrenous ulcers on the coronary bands without, however, affecting the interdigital space. Similar lesions were found on the udder and on the tongue. There was no fever, bowels were normal. Finally the animal could no longer rise, the mouth could be opened only slightly. On post mortem, aside from the lesions described, there was a purulent inflammation of the trachea and the bronchi and a right lobar pneumonia with an adhesive pleuritis and swelling of the thoracic lymph glands. Large ulcers were also observed in the rumen, omasum and abomasum, hyperemia of the meninges with fluid in the ventricles of the brain. Besides there was also a swelling of the spleen and a cloudy swelling of the liver and kidneys. This disease occurs in Sumatra sporadically and the principal sign is a rhinitis gangrenoza. It is very likely identical with malignant catarrhal fever.

Hemorrhagic Septicemia in Cattle. An ox disclosed hematuria, fever, inappetance, icteric mucous membranes and a swelling of the head, which in form resembled that of the head of a rhinocerous. There was a serious discharge from the nose, mouth and from the eyes. Besides this in various parts of the body subacute edema were present. In fourteen days an improvement set in. An inoculation of a rabbit with the blood from this ox gave no results, probably as during the recovery of the animal the bacilli were no longer present in the blood.

Dr. H. Welch reports that a 10% solution of nitric acid applied locally has been successfully used in the treatment of the mild cases of ovine necrobacillosis.

CARBON TETRACHLORIDE BECOMING KNOWN EVERYWHERE

A telegram has been received from Fiji reporting the successful treatment of more than 12,000 hookworm cases by carbon tetrachlorid with 90 per cent of cures with one dose, and the removal of 98 per cent of the worms. This method was tried first on dogs by Dr. Maurice C. Hall of the United States Bureau of Animal Industry, who found that 0.3 c.c. of the drug for every kilogram of live weight expelled all the hookworms of those animals, a result he had never previously obtained by any other method of treatment, while it could be given after fasting in hard gelatin capsules without purgation being necessary. As the new drug is much less toxic and far cheaper than either thymol or oil of chenopodium, the last of which has given rise to a number of fatalities owing to the uncertain amount of the active principle in different samples, these are matters of great practical importance, and the remarkable success of the trial now reported will, if confirmed by further observations, prove a notable advance in dealing with this the most widespread health- and labor-destroying scourge of immense areas of the world.

(Nature, London, No. 2743, v. 109, May 27, 1922, p. 688.)

Pasteurization destroys all of the pathogenic bacteria of milk and more than 98% of the non-pathogenic.

GOLF NOT THE ONLY PASTIME AT THE GLOBE LABORATORIES

The Globe Laboratories, of Fort Worth, Texas, support a baseball team, the personnel of which is made up from the employees of the institution. The team has met and defeated some of the best clubs in Texas, and is the pride of Fort Worth fans.

In the picture are: Dr. W. J. Crocker (left), Director of the Globe Plant Operations and Executive Manager of the Team; W. G. Peterman (right), in Charge of Serum Production and Managing Captain of the Team. The Players Are: Top Row, Left to Right, Le Blue, Rountree, Blackburn, L. Ponder and C. Ponder. Bottom Row, Left to Right: Pettit, Chapin, Sommrall, Roberts and Van Wagenen.

We Pick Chapin as the "Babe Ruth" of the Team.

Parasitology

Edited by MAURICE C. HALL, Ph.D., D. V. M.

The Eggs and Larvae of Cattle, Sheep and Goat Parasites

IN previous issues the eggs and larvae of some parasites of dogs, cats, foxes and swine were discussed and figured. This discussion is continued here for parasites of cattle, sheep and goats.

These animals are infested with a number of tapeworms belonging to the group which includes the unarmed tapeworms, or those in which the head or scolex is not provided with hooks. So far as can be judged from the literature, goats are less subject to tapeworm infestation than are sheep and cattle. Tapeworms are often found in the small intestine of ruminants, the usual site for tapeworms

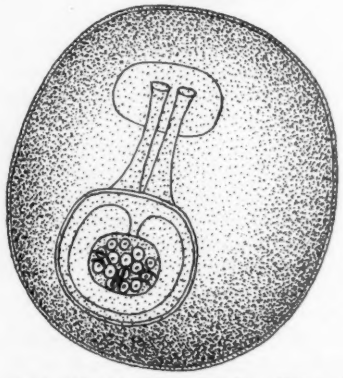


Fig. 1. *Moniezia planissima.* Egg. Enlarged. From Stiles and Hassall, 1893.

in general, but in some cases they are also found in the ducts of the liver and pancreas, in the gall bladder and, rarely in the stomach, as is the case of Thysanosoma actinioides of sheep, this being the fringed tapeworm found in sheep in the western United States. Stilesia hepatica occurs in the biliary ducts of the liver in sheep and goats and in the stomach of cattle, and Avitellina contripunctata is reported from the stomach of cattle and the small intestine of sheep.

The eggs of tapeworms belonging to the genus Moniezia are thin-shelled and the embryo has, in place of the radially striate embryophore of the taenioid cestodes, a special structure called the piriform apparatus. In its most highly developed condition this consists of a central bulb surrounding the onchosphere, with two so-called horns extending from the bulb and terminating in a disk. The diameter of the eggs of some of the commoner species of Moniezia are as follows: M. expansa, 50 to 60 microns; M. planissima (Fig. 1), 63 microns; M. trigonophora, 52 to 60 microns. The eggs of Thysanosoma actinioides are 70 to 105u long by 35 to 58u wide; the piriform body is without horns in this species. In examining feces of ruminants for evidences of tapeworm infestation, it appears probable that one will usually find gravid segments containing the eggs of the tapeworms present rather than free eggs released from the segments. The gravid segments of Moniezia are wider than long; those of Thysanosoma tend to show a triangular outline when viewed dorso-ventrally, the anterior margin of the segment contracting to a blunt point and the

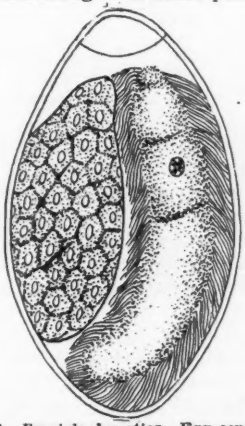


Fig. 2. *Fasciola hepatica.* Egg containing embryo, or miracidium. Enlarged. From Fiebiger, 1912, after Csokor.

posterior margin displaying the fringe-like structure present on the posterior margin of every segment of the worm.

There are few flukes known to occur in ruminants in the United States. The most important one is the common sheep liver fluke, Fasciola hepatica, which occurs in sheep, goats, cattle and swine. It is rarely present in horses and then usually in young animals.

Fig. 3. *Fascioloides magna.* Egg. Enlarged. From Stiles, 1894.

The eggs (Fig. 2) are 130 to 145 microns long by 70 to 90 microns wide, yellowish-brown, and with an operculum, or lid, at one end. The large liver fluke of cattle, Fascioloides magna (Fasciola magna), has been reported but rarely from sheep. The eggs (Fig. 3) are 140 to 160 microns long by 90 to 100 microns wide, brown, and operculated. The giant liver fluke, Fasciola gigantica, reported from the Philippines, has eggs 125 to 175 microns long by 60 to 100 microns wide. Dicrocoelium dendriticum (Dicrocoelium lanceatum), a fluke common in Europe, but not yet reported from

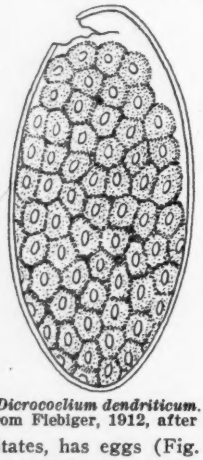


Fig. 4. *Dicrocoelium dendriticum.* Egg. Enlarged. From Fiebiger, 1912, after Csokor.

the United States, has eggs (Fig. 4) 38 to 45 microns long by 22 to 30 microns wide. The conical amphistome, Paramphistomum cervi (Amphistoma conicum), occurs in the rumen and reticulum of cattle and other ruminants and is sometimes found in these animals in the United States. The eggs are 155 to 162 microns long by 82 to 90 microns wide, thickened at one pole and operculated at the other. Schistosomes, a group of flukes inhabiting the blood-vessels, have not yet been reported as present in domesticated animals in the United States. The eggs of these flukes are usually much elongated. In the bovine blood fluke, Schistosoma bovis, the eggs (Fig. 5) are 160 to 180 microns long by 40 to 50 microns wide, with a pronounced swelling in the middle and armed with a pointed spine at each end. In the case of this species, the eggs may pass in the manure and in the urine, as the veins both of the rectum and of the bladder may be inhabited by the flukes.

Ruminants are infested by a large number

Fig. 5. *Schistosoma bovis.* Egg. Enlarged. From Railliet, 1893, after Sensino.

of species of nematodes, some of which occur in the digestive tract or respiratory tract with the evidence of their presence in the form of eggs and larvae in the feces, and some of which occur in the blood, body cavity and various tissues and which cannot be determined as present by fecal examinations.

Two of the swine parasites of which the eggs were figured in the previous article in this series, namely, Arduenna strongylina and Physocephalus sexalatus, have recently been reported as accidental parasites of cattle in the United States by Dikmans, and another swine parasite, the kidney worm, Stephanurus dentatus, has been reported from cattle by Hall. The gullet worm of cattle, sheep and goats, occasionally present in horses, Gongylonema scutatum, has an egg (Fig. 6) 56 to 60 microns long by 32 to 36 microns wide, containing at the time of oviposition an embryo provided with a hook-like process on one side near the

anterior end, the opposite side of the anterior end of the worm showing an annulate marking. The eggs of another gullet worm, G. verrucosum, of sheep and goats, are 45 to 50 microns long by 25 to 27 microns wide. The eggs of the cattle ascarid, Ascaris vitulorum, are 75 to 80 microns in diameter. The ascarids found in sheep appear to be specimens of Ascaris lumbricoides of man and swine, present as accidental parasites in an unusual host and quite generally incompletely developed and devoid of eggs, or at least of fertile eggs.

The eggs of the numerous strongyles occurring in the digestive tract of ruminants are commonly more or less elliptical and thin-shelled. Although the egg sizes overlap in

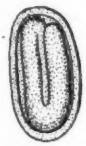


Fig. 6. *Gongylonema scutatum*. Egg containing embryo. Enlarged. From Stiles, 1892.

many cases to such an extent that it is often impossible to determine the species present, a reasonable probability as to the presence of certain worms may be established in the case of some worms. Haemonchus contortus is so commonly present that the presence of eggs falling within the size range for this species may be taken as a fairly safe indication that this worm is present.

The egg sizes in microns for some of the larger strongyles, those having a well developed mouth capsule and belonging to the family Strongylidae, are as follows: The cattle hookworm, Bustomum phlebotomum, 75 to 98 long by 40 to 50 wide; the sheep hookworm, Bunostomum trigonocephalum, 75 to 83 long by 38 to 45 wide; the cattle hookworm, Proteracrum radiatum, 75 to 85 long by 40 to 50 wide; the common sheep hookworm, Proteracrum columbianum, 65 to 75 long by 40 to 45 wide; the goat hookworm, Proteracrum asperum, reported from the Canal Zone, 83 to 85 long by 55 to 60 wide; the veined hookworm of sheep, Hysteracrum venulosum, 85 to 90 long by 45 to 55 wide; the sheep and goat hookworm, Gaigeria pachyscelis (Fig. 7), reported from India and the Belgian Congo, 105 to 118 long by 50 to 55 wide; the strongyle from the large intestine of ruminants, Chabertia ovina, 90 to 100 long by 50 wide.

The egg sizes in microns for some of the trichostrongyles, which are the smaller strongyles, those without a well developed mouth capsule and belonging in the family Trichostrongylidae, are as follows: the common stomach worm, Haemonchus contortus (Fig. 8), 75 to 95 long by 40 to 50 wide; H. similis, reported from the United States by Dikmans, 70 to 78 long by 35 to 42 wide; Ostertagia

Fig. 7. *Gaigeria pachyscelis*. Eggs. Enlarged. From Gaiger, 1911.

ostertagi, 65 to 80 long by 30 to 40 wide; O. circumcincta, 75 to 100 long by 35 to 50 wide; O. trifurcata, 85 to 95 long by 40 to 48 wide; O. marshalli, 160 to 200 long by 75 to 100 wide; O. bullosa, 85 long by 65 wide; Cooperia punc-

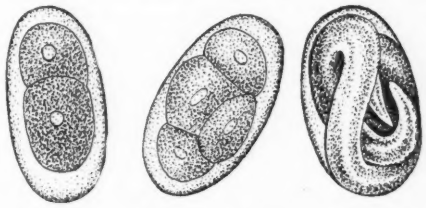


Fig. 8. *Haemonchus contortus*. Eggs in various stages of development. x 380. From Veglia, 1916.

tata, 65 to 72 long by 30 wide; C. oncophora, 60 to 80 long by 30 wide; C. pectinata, 70 to 80 long by 36 wide; C. curticei, 63 to 70 long by 30 to 32 wide; Nematodirus filicollis, 130 to 200 long by 70 to 95 wide; N. spathiger, 150 to 220 long by 80 to 110 wide; N. abnormalis, 160 to 230 long by 85 to 115 wide; Trichostrongylus extenuatus, 70 to 80 long by 35 to 45 wide; T. colubriformis, 73 to 80 long by 40 to 43 wide; T. probolurus, 76 to 80 long by 43 to 46 wide; T. vitrinus, 84 to 90 long by 46 to 50

wide; T. capricola, 75 to 95 long by 35 to 45 wide.

The Y-worm of cattle and carabao, Syngamus laryngeus, a relative of the gapeworm of poultry, has been reported from the Philippines by Hall and has recently been reported by Ransom and by Bagué from Porto Rico. The eggs of this worm are 80 microns long by 40 microns wide.

The eggs of the common whipworm of rum-

Fig. 9. *Trichuris ovis*. Eggs. Enlarged. From Fiebiger, 1912, after Csokor.

inants, Trichuris ovis (Fig. 9), are lemon-shaped and 70 to 80 microns long by 30 to 35 microns wide. Those of the hair-worms, belonging to the genus Capillaria, are also lemon-shaped, the dimensions for the various species being as follows: Capillaria bovis of cattle, 47 microns long by 27 microns wide;

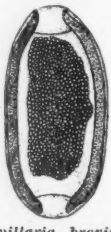


Fig. 10. *Capillaria brevipes*. Egg. Enlarged. From Ransom, 1911.

C. brevipes (Fig. 10) of sheep, 50 microns long by 25 microns wide; C. longipes (Fig. 11) of sheep, 45 to 50 microns long by 22 to 25 microns wide.

As noted in the paper on eggs and larvae of swine parasites, the eggs of species of the genus Strongyloides contain well developed embryos when passed, and these eggs hatch promptly. The eggs may be found in fresh feces, but in older feces the free larvae are present. Brumpt, in 1921, reported a new Strongyloides, S. vituli, from cattle, but no description of this species is yet available. The eggs of S. papillosus of sheep and goats are 40 to 60 microns long by 20 to 25 microns wide. The rhabditiform larvae and the filariform larvae are similar in a general way to those of S. stercoralis, figured in the paper on eggs

Fig. 11. *Capillaria longipes*. Egg. Enlarged. From Ransom, 1911.

and larvae of swine parasites.

As previously noted, the eggs of the lungworms belonging to the family Metastrongylidae hatch in the lungs and the larvae ascend the trachea and are usually swallowed, passing out in the manure. The larvae of the common lungworm of cattle, Dictyocaulus viviparus, are 280 microns long by 25 microns wide when first hatched; these larvae have a button-like

Fig. 12. *Synthetocaulus capillaris*. Larva. Enlarged. From Fiebiger, 1912.

head and a rather blunt tail. The larvae of the common sheep lungworm, D. filaria, are somewhat similar. The larvae of the hair lungworm of sheep, Synthetocaulus rufescens, are 300 to 400 microns long by 16 to 18 microns wide and have a tail prolonged by an undulate appendix. The larvae of S. capillaris (Fig. 12) are similar and are 230 to 300 microns long by 20 microns wide.

The embryo of the stomach worms of sheep practically all perish in one year on pasture land.

Zootechnics

Edited by E. MERILLAT, M. D. V.

THE HORSE IN ITS HIGHEST ESTATE

The grace of the equestrienne, the uplifting and invigorating influence of the bit and the spur, and the morale attainable only through the love of animals, guarantees a permanent place for the horse in the affections and in the affairs of man. Imagine, if you can, an artist finding such an inspiration amid an array of the finest limousines.

DISEASES EXACT HEAVY TOLL

From April 30, 1921, to May 1, 1922, approximately 3,082,000 hogs died from disease in the United States. This figure is apparently in addition to the loss of suckling pigs during the first three weeks after farrowing. The number that died is slightly larger than the average number for the five years preceding, although it is less than half of the number that died in 1914. The loss in cattle for the same period of time has been approximately 2,016,000 which number is below the average annual loss for the five year period preceding. The sheep loss for the same period of time was 1,293,000, which is also below the average loss for the five year period, preceding. The loss of horses and mules was a little over one-third million, and is slightly less than in preceding years.

The value of the animals that died of disease in the United States is more than sufficient to pay the income of all veterinarians for a long period of time. No doubt, the loss in live stock would have been much larger had not the veterinarian used preventive and curative measures on the farms in this country.

California Dairy interests have an organization known as The California Dairy Council. This organization is supported by the dairy interests of California. The Council is active in educational work on the nutritional value of dairy products as human food, dairy improvement and the importance of the dairy industry to the economic welfare of the state. As a result of the activities of this organization, there was an increased consumption of butter in California in 1921 and good prices prevailed.

WHAT IS CHURNING?

Will your zootechnics department tell me what churning is? That is I want to know what change takes place that separates the butter fat.—A. J. T., Va.

Reply: This is a simple appearing question and yet a good one. It is a fact that the ordinary phenomena around us are those we often know the least about.

Churning is a process of whipping the fat globules of cream into butter granules. The impact of the churn-paddles tears away the films which cover the fat globules and enmesh the mutilated globules to one another. In other words butter consists of the fat globules of milk enmeshed to one another through the medium of the torn films which cover them.

In a recent investigation of the souring of beef, the B. megatherium was found to be the causative factor.

ROPY MILK

As the milk situation becomes more complex and demands for better preservation of drinkable sweet milk increases, ropiness is becoming a greater problem than when milk was handled in such a way as to sour promptly. Ropiness is a condition that creeps in while milk is being kept sweet by keeping the bacterial count low and the milk cool. When milk is consumed soon after milking or is allowed to sour quickly ropiness does not often occur.

There are different degrees of ropiness. The condition may be so slight as to almost escape notice or it may be so pronounced as to give cream the consistency of a thin bread dough.

The cause is a bacterium (B. aerogenes) which seems to be an insidious inhabitant of the milk-can and other utensils which come into contact with milk. It is also found in the water of the milk house when this is not properly handled (standing water) and from this point of departure is carried about on the exterior of cans even when they have been well sterilized on the interior.

Although Harding and Prucha (Jour. of Dairy Science Nov. 1920) do not place much stress on the milk-house contamination, others before them and many dairymen now hold contrary opinions, having not only found the bacterium in this medium but have proved that given outbreaks are often impossible to control until the milk-house has been included in the clean up program instituted to correct matters.

The point is illustrated in an outbreak on a small farm where only three cows were kept, and which proved exceedingly puzzling. The milk from these cows was separated and after cooling was kept in a five-gallon milk can and called for each week by the wagon of the neighborhood creamery. Each week despite the fact that all possible source of the infection were attended to by careful scalding of every utensil that came either directly or indirectly in contact with the milk, the condition continued. The milking was done as clean as milking can be done, even to the point of disinfecting the udders and sides of the cows as well as the milker's hands. A sample of milk was collected from each teat of each cow in four ounce sterilized bottles and set with cotton stoppers in a cool cellar for observation. None of the samples became ropy. It was then decided to clean up the milk house which was supplied with water from a well from which the water was pumped with a wind-mill. It was disinfected by airing and light for a week and then when everything within was perfectly dry a good disinfectant to the walls, floor and trough was used. During this week while the cream was kept cool in the farm-house cellar, the milk did not get ropy nor did the condition re-appear after the cleaned up milk-house was again put into use. Thereafter in all similar outbreaks the milk-house was included in the cleaning up process with much better results than we had ever had before in handling this condition on small farms. In a measure this confirms the observations of others that the exterior of milk-cans, although well sterilized interiorly, is a carrier. Harding and Prucha mention this in connection with milk-cans contaminated in the can-washing vats of distributing plants, even where the interiors were well steamed.

The veterinarian when called upon to handle a ropy-milk outbreak must therefore concentrate his efforts to sterilization of everything that can possibly be a carrier.

Ropy milk is not harmful as food; it is even relished by some milk drinkers. The harm arises from the fact that the product is not marketable. It is not caused by garget.

SWINE HERD DOGS

Dogs are subject to training and perhaps one of the most useful animals to mankind. In some sections of the United States, dogs are trained particularly to assist in the round-up of range hogs. Range hogs and particularly those on large ranges are frequently rather ferocious if they are disturbed or excited and they are quite apt in self protection in a combat. It is not uncommon for range hogs to be kept until they are four or five years of age. There are a few rather extensive ranches on which hogs are profitably produced without being provided with any foods excepting the nuts, grasses and other provender they obtain from the range.

The magnitude of range hog production and the services of dogs may be illustrated by citing a recent roundup of 1400 hogs on one particular ranch of 19,000 acres, on which there is something over eighty miles of hog wire fence. Round up of the hogs on such a ranch is accomplished by men on horse back, the man being provided with heavy chaps, boots and spurs and each man has a trained hog dog. On the particular ranch in question a round up pen is provided with the usual long wings to direct the hogs to the corral proper. The hog dog is trained to bay when he finds a hog. This baying is a signal for the rider. The hogs are usually in droves and will chase

the dogs and the dogs are so trained that when the hogs start after them they will run toward the roundup pen and the hogs will follow. After the dog gets into the corral he goes to the far side and jumps over the fence, otherwise the hogs would attack and kill him.

The hog dog is also used in marking the pigs, the dog keeping the sows at bay while the pigs are caught and marked by the riders. The range pigs are usually marked by notches or slits in the ear and there have been some rather disastrous feuds, which develop as a result of disputes arising over the ownership of range swine.

Hog cholera in range swine is extremely difficult to control because of the difficulty of quarantining and treating the animals under range conditions.

The old razor-back type of hog is fast disappearing from the range, as most of the range hog men are using pure-bred boars.

SCRUB BULL MEETS THOROUGHBRED HEIFERS

The bull, though ill bred and wise in the ways of bulls, was unrestrained and allowed to run at large. The heifers were young—but 13 months old—and unsophisticated, and without regard for the wishes of their owner, who had planned to have them make their debut in bovine society when they were two years old, when mates of high degree and suitable breeding would be selected for them. But the bull had other ideas, and, on meeting the heifers in their pasture, proceeded as bulls will, and the owner's plans for an early social career for the heifers were blasted. Seven poor-bred calves were the result of the meeting, which also had the effect of stunting the heifers' growth.

El Toro's Indiscretion Costly to Owner

The owner of the bull was mulcted in damages because of the mesalliance. He claimed an alibi for his bull, but the latter had been seen in flagrante delicto. The Supreme Court of Kansas affirmed the judgment in Matthews v. Langhofer, 202 Pacific Reporter, 634. Chief Justice Johnston wrote the opinion, in the course of which he said in discussing the question of damages:

"Two elements of damage entered into the loss suffered by the plaintiff, one from injury to the heifers resulting from the premature breeding, and the other from the loss of production of thoroughbred calves if they had been bred to a registered bull at a suitable time, as the plaintiff intended. There was plenty of testimony to the effect that premature breeding, when the heifers were only 13 months old, was a real injury to them. It was to the effect that it would stunt their development and diminish their breeding value for the future.

Damages Assessed Two Ways

"Some said there would be injury to the extent of $75 on each heifer, and others that their value would be depreciated about one-half. The plaintiff contemplated breeding them about January of the following year, and we think the injury and depreciation of value was well established by this evidence. The other element was the loss of production for a season. The premature breeding in June, 1917, operated to postpone a breeding at the proper time, and resulted in a loss of production of thoroughbred calves the following year. The loss of production was separate and distinct from the injury to the heifers and the depreciation of their value by the premature breeding, and only by an award of indemnity for both could the plaintiff be compensated for the actual loss resulting from defendant's negligence."

(Am. Law Rev.)

Mottles in butter arise from improper working of salted butter. They do not occur in unsalted butter and are caused by incomplete fusion of the water and brine.

According to Harding and Prucha of the department of dairy husbandry of the University of Illinois, the estimate on the total amount of dirt found in ordinary milk is erroneous. The amount of soluble dirt in milk is estimated by them to be less than one-half to one million.

The Cooper Hog Ranch, near Denver, Colorado, a modern practical hog breeding farm on which over 1,000 brood sows are maintained, is one of the interesting industries of this country. All boars and most of the sows on this ranch are pure-bred.

Over 60 per cent of chopped straw is digestible when boiled for three hours in a one per cent solution of sodium carbonate. No doubt, the process of treating waste materials with soda ash will be improved and the feeder will have an unlimited possibility of obtaining cheap and efficient stock feed from straw, cobs, etc.

AVERAGE MILK PRODUCTION LOW

The average annual production of American cows is too low. Four thousand pounds of milk and 160 pounds of butter fat are the figures given in a recent report. These figures could be greatly increased, and in fact must be, before dairying can be called a profitable industry. Better breeding (the elimination of scrubs and low producers); better feeding (proper balance of ration); and attention to the details of sanitation (better housing and the eradication of dairy herd scourges); must be more studiously and more universally appreciated before much improvement can be expected in this connection.

The dairy interests devote a great deal of time to the study of the first two (breeding and feeding), but seem to religiously keep the last one (disease) in the background and thus turn the attention away from the most baneful of all influences against high production and profit.

Proper breeding and feeding programs are of course fundamental but without attention to tuberculosis, abortion disease and the hygiene that will curb the ravages of these, the dairy situation, we believe, will become more hopeless than ever.

The Voigt filled milk bill which will prohibit the interstate shipment of filled milk has passed the House of Representatives. The vote was 250 to 40. Notwithstanding the conviction of many that a tax bill similar to the measure that controls the manufacture of butter substitutes, would be more desirable, this measure will have a stunning effect and will eliminate this insidious enterprise as fast as each state takes similar action. Many of them have already done so.

ACCREDITED HERD DEMANDS INCREASE

The large demand for accredited herds of cattle or the desire to eradicate bovine tuberculosis has become so large that Congress has recently appropriated $2,877,600 for this purpose. It is estimated that in addition to the money provided by Congress the various states will provide $5,000,000 for the payment of indemnities during the coming year. This systematic plan for tuberculin testing, established in 1917, has appealed to men who appreciate the cost of tuberculosis and they are willing to submit their herds to state and government supervision. Marked progress has been made in the application of the tuberculin test and in the handling of herds containing reacting animals which encourages us to believe that this work will go forward much more rapidly than it has in the past and far better results will be accomplished.—Hoard's Dairyman.

Comment: While this growing popularity may seem encouraging it is unfortunate that evidence is piling up to indicate that the real objectives are less attractive than the free and even profitable clean up of herds at public expense. We are informed on good authority that much of the enthusiasm to get on the accredited herd list often slumps quite promptly after the first emoluments have been derived. That is to say, the free test and the indemnities, which are sometimes high, seem to be the real cause of the popularity instead of an honest desire to keep clean thereafter.

Accredited herd work is done for the public good. It is only fair that it be done at public expense, but until the initial incentive is the determination to keep clean, the movements to eradicate tuberculosis from cattle, will likely fail from lack of a solid foundation as a point of departure.

Veterinarians started early to scare the people away from animal products for food. A distinguished veterinarian in June, 1899, read a paper before a veterinary association in which the whole trend of the narrative was to show that there is a "uniform ratio between the quantity of such foods consumed and the prevalence of tuberculosis among the people." He blamed the ravages that tuberculosis was then making among the North American Indians to the tuberculosis beef the government fed them, emphasized that the "cow is the most important factor in the spread of the disease," and arrayed the medical profession for its stupidity in presuming that there could be some relation between the avenue of entrance and the location of the lesions.

The Kansas City Missouri Park Board is contemplating the establishment of bridle paths in connection with various boulevard systems. This movement is in conformity with the return of the saddle horse. There was a successful saddle horse sale in Kansas City recently, in which about fifty high class horses were sold.

Canine, Feline and Avian Practice

Valuable Airedale Recovers from Fracture of the Thoracic Vertebra

THE animal herein described is the property of John W. Scott, of Philadelphia, treated by Dr. H. B. Balthaser, 4907 Market Street, that city, for a serious traumatism incurred February 26, 1922, when it was struck by an automobile. A report of the case, submitted to VETERINARY MEDICINE by Dr. Balthaser, is as follows:

Diagnosis and First Aid

"One half hour after the accident, I was called to treat the patient and diagnosed the

case as a fracture of the spine in the thoracic region with paralysis of both hind legs. The legs were dangling back and were powerless. The back, in the region of the eleventh vertebra was arched and out of line. I immediately set the bones and applied a temporary bandage, then took the dog to my private hospital and applied a permanent cast (consisting of a silicate of soda, cotton and bandage) around the thorax and shoulders to keep the bones in apposition.

Unique Nosocomial Treatment

After this, I applied a bandage-padded pack, reaching from the top of the shoulders to the root of the tail to prevent arching movements of the back, and two other strips, one on either side of the body, reaching from the side of the shoulder to the hip, to prevent lateral motion. The dog was kept standing three hours until the cast was thoroughly set and fixed to the body. The dog was cathetrized and then permitted to lie down in a padded cage. To relieve the distress from lying in one position, he was placed in a sling-arrangement similar to the horse slings, twice daily, during meal time, and then fed in a pan, fixed to a table at a comfortable height, so that the head would be kept in a normal position and not exert the body by its movements. Catheterization twice daily was practical until the eighth day when urine began to dribble off. Enemas were given daily until the fourteenth day when bowel movements occurred without assistance.

In regard to the medical attention, the animal was given calomel, strychnin and sodium iodid, and daily massages with mild liniments

and electricity.

On the eighth day when the dog began to urinate, jerking impulses were observed in the left hind leg and a few days later, both hind legs were twitching and jerking at intervals.

Convalescence Scientifically Interesting

"Two weeks after the accident, when hoisting him into the sling as usual for meal time, and especially before feeding, I observed him flexing both hind legs and stamping the feet. It was during the third week of the treatment that he began to support the body momentarily. At the end of the third week, while in the slings, he began to take short steps, during the excitement just before receiving his meals. It was then I began to plan the "walker," shown in the illustration and which I constructed myself. It was equipped with ball-bearing rollers. I placed him into it, passing the hind-legs through two holes made in a canvas, arranged on the adjustable slat of the "walker," so that the hind legs could be kept in a natural position. The front legs being normal, pulled the walker along while the hind ones following, would take short but careful steps. Instead of being placed in the slings, he was then placed in the "walker" twice daily.

Padded Splints Used After Cast Was Removed

Improvised Ambulator Used to Support the Dog During the First Exercising Period

He was allowed the "walker" longer periods from day to day, as the strength increased. At the end of the fourth week, he could use the apparatus without bearing on the slings. He was, however, not allowed to walk unassisted until the end of the fifth week, when the "walker" was discontinued. Gaining strength continually, he was discharged from the hospital, and now (3 months later) has enough control of his body to play with a ball and jump into the air with all fours. Medical treatment was continued until the end of the eighth week.

"I attribute the speedy recovery to the prompt attention and proper reposition and retention of fracture and also to the good disposition of the patient."

Dog Taking Exercise Unassisted

Dr. H. A. McIntyre vouches for the following as a good anesthetic for dogs: Chloral hydrate, 2 ounces; gum acacia, 2 ounces; distilled water 1 pint. Give one ounce per rectum for small dogs and two or more ounces for large ones.

Subcutaneous injections of adrenalin are not entirely harmless. When used too freely and in too strong concentrations they may prove fatal. Death occurs two or three days after administration.

The greatest fault with chloral hydrate anesthesia, a colleague declares, is the fact that the state of anesthesia lasts several hours and keeps the busy practitioners waiting too long for the patient to revive.

Veterinary Service in the Poultry Industry

By Professor Allen G. Phillips, Lafayette, Ind.
Professor of Poultry Husbandry, Purdue University

Not an Exponent of Cracked Grains

I do not believe in feeding cracked grains and I am going to tell the reason. I saw the other day a beautiful mixture of feed on the market. It had in it pearl hominy made from yellow corn. Those of us who study about vitamines which are something we hear about and know about and never saw, nobody else ever saw them either, know in that pearl hominy every bit of kick that corn ever had is taken out. The bran is taken out, the corn sugar is taken out and all we have left is the flinty part. I don't want the cracked corn in feed, because it is not reliable.

I can give an example. Down in the hills of Kentucky there have been a great many cases of rickets among children, pellagra, etc. We found that those people ate hominy, hog and hominy and salt pork and hominy. It has been found that by adding just one or two little things to that diet the whole problem of rickets and pellagra has been eliminated. The vitamines and mineral salts were all they needed to add. Now cracked grains that are polished and sifted and bolted very often have those taken out, so I say our grains in ninety-nine cases out of one hundred ought to be whole grains such as corn, wheat, oats and barley. If you haven't four take three, if you haven't three take two. I wouldn't split hairs on it. I put oats almost at the bottom because of its low value. I put corn at the top, if I had nothing but corn I would get along just as well. I don't need wheat now as it is too high.

Leg Weakness of Chicks Nutritional

We find when chickens break down and have weak legs we call it leg weakness in little chickens. Nine times out of ten it is a non-infectious disease due to lack of vitamines. One time we had trouble with chicks about three or four weeks old. They all got down on their hocks. We opened the door and let them run in the alfalfa patch and in two days we couldn't find a single chicken that was down. Immediately we recommended the feeding of alfalfa to chickens. We give sprouted oats if possible and let them eat dirt and all. We give them hard coal ashes from the stove and we supply those chickens with mineral salts as nature would give them. We give them some thin leafed greens and we have the best chickens. Out of some thousand chickens we raised ninety-one per cent and that is a very good average.

Every day I get an average of ten or twelve calls on sick chickens and they want to know what to do and in most cases I don't have to refer to a veterinarian. I just recommend that those chickens be fed proper vitamines.

Limber-Neck Often Due to Bad Feeding

Now we found a great deal of toxic poison that caused limber-neck, the necks pull back almost to the tail. This is probably a feeding proposition due to putrid animal matter but as a rule it is merely bad feeding. If they will add exercise, get them on the ground, add green food to the ration, balance the diet, that which they call a disease which isn't a disease gets away from them. If you turn chickens out doors they will eat dirt first before they will eat green stuff; therefore, there must be something lacking in the average ration.

Roup a Misnomer

Roup is probably the disease that causes more people to worry than any other one thing a chicken has. Roup is like a hoop skirt, it covers everything and touches nothing. It is a misappropriated term. Now I think that some of it, particularly when the cheesy matter forms, may be due to malnutrition. If you find you are called upon to diagnose a case in which a chicken suddenly dies, I would suggest that you look and see if there hasn't been suffocation or diphtheric canker around the larynx or windpipe. I have seen several cases like that. The history of it was that we found they were suffocated from some form of roup.

People wonder what to do for roup. I have an idea that our good friend from Ohio may tell you that chicken-pox is another form of roup or is very closely correlated. If vaccines are made particularly from certain flocks within the neighborhood in which your flock or the flocks you are interested exist, it can have some very beneficial effects.

Epsom Salts a Good Chicken Medicine

I know mighty well that you fellows have to guess when you are not sure. That is the class we travel in and we might as well admit it. I think if you will tell the average farmer

(Now turn to Page 410)

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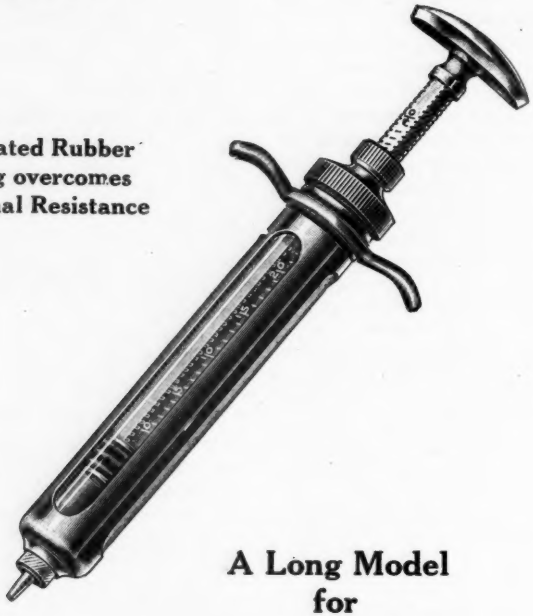

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Live Stock Poisoning

Edited by L. H. PAMMEL, Ph. D.

Professor of Botany, Iowa State College, Ames, Ia.

HEDGE MUSTARD

A dairyman's cow presented a peculiar array of symptoms: Infected rumen, icterus, extreme costal tenderness and of course inappetance and agalactia, temperature 105° F. Treatment: eliminant and febrifuge. Next day animal some better with the temperature 103° F. Food was pasture and bran. The weeds in the pasture were red root, dock, plantain, pepper grass, wire grass and the enclosed specimen with which I am unfamiliar and fear might be poisonous. Kindly name and identify the plant indicating toxicity, if any. All animals (cattle) have been removed from the pasture.—C. E. B., Kans.

Reply: The specimen sent is a species of hedge mustard (Sisymbium officinale) which is not, so far as I know, poisonous. Like all other members of the mustard family, it may, however, produce symptoms of irritation, but even then the hedge mustard is not a very strong irritant and I doubt very much whether the symptoms herewith described could have been produced by it.

IS THE BRACKEN FERN POISONOUS?

"Since you are recognized as our leading authority on poisonous plants, I should be greatly obliged if you would favor me with your opinion about the poisonous properties of the bracken-fern. I find a very great diversity of opinion among farmers here in regard to it. In the Northwest, this, as you know, is one of our worst weeds, and is a continuent of all hay; but horses avoid it except when hard pressed by scant food-supply. Prof. Lawrence of the Agricultural College is out with a bulletin on the stock-poisoning plants of Oregon, in which he enumerates the fern. Many of our farmers and even the State Veterinarian deny that it is injurious. But it would seem to me that the Canadian experiments reported in Jadwen & Bruce (Dept. Agrl. Canada Health of Animals Branch, Bull. 26, 1917) are fairly conclusive. Not having access to your book on poisonous plants, I should deeply appreciate your opinion. Will you tell me also if the poisonous principle has been isolated and chemically determined?"—J. C. K., Ore.

Reply: The common brake or bracken is an extremely common plant in Washington, Oregon, California and British Columbia, more common than in the East. The statement in my Manual of Poisonous Plants is very brief. The testimony given there is not sufficient to warrant classifying it as a poisonous plant. Since the publication of my book it has been demonstrated quite conclusively by Hawden & Bruce of Canada that it is poisonous, and I have accepted the results of this excellent work, as proving conclusively that the plant is poisonous. The marginal fern and male shield fern sometimes certainly cause poisoning. Since the Manual was written and since the appearance of the Hawden and Bruce paper I have had several notes in Veterinary Medicine from reliable sources that make me think it is poisonous.

BLUE VERVAIN SUSPECTED POISONOUS TO HOGS

Will you kindly identify the enclosed weed and let me know if it is poisonous to hogs? One of our farmers lost six sows which have been running on good blue grass pasture. The local veterinarian thought the trouble was due to weed poisoning. Will you kindly give me the names of weeds that are poisonous to swine and which are found at this time of year in southwestern Iowa?—H. L. E., Ia.

Reply: The specimen sent is common blue vervain (Verbena hastata), a species of vervain common in the northern part of the United States and in Iowa. I have observed quite generally that live stock (cattle, horses and hogs) do not eat it. Evidently there is something in the plant that is offensive to them.

I do not remember of having seen an account of a single case of poisoning from plants of this character. It would therefore be difficult for me to say what the trouble is with these hogs and do not think the plant caused the trouble. I have often wondered why live stock do not eat vervain. The plant is prob-

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ably objectionable because of its slightly bitter taste.

SUPPOSED INJURIOUS MUSTARDS

Would you kindly name the three enclosed specimens and state whether they will cause bloat in cattle if eaten in quantities?—F. C. Y., Illinois.

Reply: The three specimens of mustards sent prove to be common pepper grass (Lepidium apetalum), shepherds purse (Capsella bursa-pastoris) and the other (Berteroa incana).

Certain types of mustards have at times caused bloat in cattle when the plants are covered with dew or when very moist. I do not believe them injurious otherwise, and although rather pungent herbs I think a considerable amount would have to be eaten to cause trouble. Certainly bloat would not be caused if the animal was in perfect condition and had the proper feed of other sorts, especially blue grass.

PARSNIP OR BUCKEYE POISONING

Under separate cover I am sending specimens of two plants: (1) is known as wild parsnip and (2) is leaves of the buckeye. May 9, my client noticed one cow to be stupid and the next morning she was in a recumbent position, similating parturient paresis. I gave atropine and inflated the udder. Temperature, 97°. Pulse 75 and weak. In an hour or two she got up and was much improved, but the next morning was worse and another cow was affected. Temperature was about 101° each. Pulse in No. 1 cow was 100 and very weak, bowels constipated in No. 1 and very loose in No. 2. I gave No. 1 a dose of purgative in morning and rumen accelerator to each at two p. m. and left more for six p. m. and ten p. m. and six a. m. However, both cows have dried up and another cow is checking on her flow. These cows have been running on pasture six weeks but were out of the permanent pasture about 1 week and were returned to it two or three days before the first became affected.

Several buckeye sprouts, three or four feet high, were in the permanent pasture and several of them were stripped of leaves, apparently by these cows. This is the only specimen of parsnip that could be found in the pasture. Were these cows "buckeyed" or poisoned or what? The No. 1 was fresh one month before and No. 2 only three weeks ago. Both were ravenous eaters.—L. B. H., Ohio.

Reply: The plants sent me are wild parsnip (Pastinaca sativa) and Ohio buckeye (Aesculus glabra). With reference to the parsnip, the plant sent is what should always be called milk parsnip: yellow flowers and straight conical roots. Many experiments have been conducted with this plant and so far as I know no one has been able to determine from experiments that it is poisonous. Some years ago I made a test on myself with this plant. A party brought it to me and said it was very poisonous, and that he knew that I would not eat it. I thereupon ate it without any injurious effect. Experiments were also made by Dr. Powers of Madison, Wisconsin, with the same results. I am aware, however, that the flowers of this plant are known to cause poisoning similar to that of poison ivy. Many experiments are recorded in which the Ohio buckeye is said to be poisonous, especially the seed.

I am inclined to think that under certain conditions the Ohio buckeye is poisonous, especially when young. Many of the plants of this family contain the substance—saponin—which has destructive action on the red blood cells. I am, therefore, inclined to think the symptoms found in the case of these cattle may be due to the buckeye.

SNEEZE WEED

A sheep owner suspects that a weed, a sample of which I am sending you for identification, is causing death in his flock. I shall appreciate your opinion.—C. E. B., Stockport, Iowa.

Sneeze weed is a well-known poisonous plant of the sunflower family (Compositae) and this weed occurs in low grounds in eastern North America from the Atlantic to the Rocky Mountains, and is particularly common in Iowa, Minnesota and Wisconsin. It has long been recognized as a poisonous weed. Cattle, sheep and horses not familiar with the plant are often poisoned when driven into localities where it is abundant. As a rule, animals avoid it, but sometimes they acquire a taste for it and are quickly killed by eating it in large quantities. The poisonous constituent has not been closely investigated but it is known that it exists principally in the flowers. The young plants are only slightly dangerous. In the mature ones the amount of poison present seems to vary greatly even in the same field. In fatal cases, death is preceded by spasms and convulsions.

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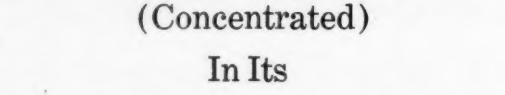

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Queries and Answers

MORE ABOUT FORAGE POISONING

I am writing to you at this time to try and get information on a couple of diseases which give me no little concern. The first is a condition in cows very much like, in fact corresponds minutely to Hutyra and Marek's description of atony of forestomachs of ruminants. The subjects in question start with a loss of appetite, diminished milk flow, cease to ruminate, emit dull moans and, in spite of treatment, pursue a prolonged course of illness.

Temperature usually remains normal, or nearly so, constipation alternates with diarrhea. Some recover, some do not.

As to treatment, I have tried nearly everything which would seem beneficial, outside of drastic purges, which I never thought did any good in digestive disturbances of cows. I used nux vomica, capsicum, gentian, aromatic ammonia, sodium bicarbonate, belladonna and gallons of oil, but just can't get them started as soon as I would like.

Now, if I remember correctly, this similates very much what Dr. DeVine describes as gastritis and on which he dwelt at length in the Journal sometime ago. I would be pleased to have information from anyone who can suggest a good treatment.

The second class of cases which I refer to are also found in horses. One receives a call at an early hour, as a rule, to see a horse down in the stall and cannot be gotten up. Generally all skinned up from throwing around in the stall, emits terrible groans and seems delirious to some extent. Temperature is normal, bowel action is variable, some having diarrhea and some having constipation.

Anything given does not seem to relieve condition much. The animal just paws the air, groans and thrashes about, and usually continues that way for several days or a week, showing no improvement.

What do you call this? Would appreciate an early reply.—R. H., Indiana.

REPLY: The proper treatment to give such animals is a very careful inspection of the food and water supply.

See to it that the animals are supplied with a reduced ration and have access to good water, as ruminants should. Also, that they are allowed enough outdoor exercise to maintain a good state of health, and yet not be exposed to inclement weather.

Administer a good saline purgative of Glauber's salts, containing ginger and gentian, and follow up with proper medicinal doses of nux vomica, to which might be added small doses of sulphate of iron.

The horse case you describe is undoubtedly one of forage poisoning, which calls for very prompt treatment of bleeding and active purgation. When these two things are done early in the disease, if possible before the horse goes down, a recovery may be expected. However, when delirium has supervened, the cases are generally hopeless.

PROBABLY MILK FEVER

I am desirous to obtain information in the matter of cows following parturition which show the following symptoms. I have had several such cases. They calf in the normal way, and appear all right from six to twelve hours and then begin to show signs of milk fever, insofar as the preliminary weakness is concerned, but are able to get up when urged during the first 24 hours, when they lie down and appear to be sleeping. When urged to get up they only remain standing a few seconds. The pulse is very weak, but the temperature is unchanged and the afterbirth is properly expelled. Examination reveals nothing wrong with the uterus, but the bowel movements suspend after the first day unless enemas are used. They die on the second or third day.—A. W., Ia.

Reply by Dr. DeVine: The information in your inquiry is scarcely enough on which to risk a diagnosis. There are at least four possible conditions that may be considered, viz.: parturient paralysis (milk fever), parturient eclampsia, forage poisoning and the so-called

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digestive paralysis.

Just a little more detail of symptoms and surrounding conditions might make it easier to eliminate all of these but parturient paralysis. I would suggest that you read my article on parturient eclampsia published in Veterinary Medicine, August, 1919, Volume XIV, page 411, and see if the course of these ailments have a similarity.

From the information given my guess would be that your cases have been affected with a slow form of milk fever. Did you use udder inflation and cardiac stimulants? If so, how did the cases that died progress? Was the coma predominant or did they develop convulsions? Further information would be helpful.

RECTAL FISTULA IN A MULE

A two year old mule was brought to me with a small opening about the size of a pencil between the rectum and vagina, and on the left of the median line about 16 inches around on the left hind leg there was an abscess about the size of a gallon bucket.

It contained pus. I made a large incision, six inches long, for drainage, and then enlarged the incision in the perineum, large enough to get the nozzle of a pump into and found by feeling and probing that the two openings came together and passed under the pelvic bone.

I washed out daily, using a good strong antiseptic solution and the pus seemed to stop, so I left the upper hole heal and used the lower one to wash out as before, using the pump so it all healed up and the mule went home.

Sixty days later the mule was brought back in the same condition as at first. Then I used some mixed bacterins and it healed again, so the mule went home, but is back again for the third time with the same trouble. The mule was supposed to have been kicked.—W. E. G., Texas.

Reply: The mule has a rectal fistula, a condition that is very difficult to cure in domestic animals, because rectal operations have not reached a very high degree of refinement in veterinary surgery. There is, somewhere, a perforation in the rectal mucuous membrane, through which gases and fecal matter escape into the periproctal space, which cause reabscessation and fistula. There are cases which recover spontaneously when the perforation heals, and the foreign material in the sur-

roundings become ensystend, absorbed, or is discharged. There is nothing much to be done for such a case except that of keeping the opening from healing externally. It is not always possible to find the opening on a rectal exploration, because the mucous membrane is folded but in every case of this kind we have had the opportunity to examine post-mortem such an opening was found.

RIGID CERVIX IN HEIFERS

Please tell me the best method of handling cases of induration of the cervix in heifers during parturition. I have encountered two such cases for the first time in my practice, the cervix being dilated just enough to insert one finger and the heifer straining and in labor pain. I have tried inserting swabs saturated with belladonna and also uterine douches, but without any success. Is the guarded uterine knife of any value, or is it dangerous?—O. W. J., Wash.

Reply by Dr. DeVine: There is no specific way of handling the cases you describe. The handling will depend much on the individual case, which may be due to the spasm of the cervix; inertia of the uterus; or in rare cases, induration following previous injury or infection of the cervix.

"Watchful Waiting" the First Step

Spasm of the cervix is not an uncommon condition in cattle. At least we have not found it so in our practice. Without definite data I would venture that we encounter perhaps an average of twenty-five cases per year. We have no set way of treating them. The one principle that applies to all such cases is be patient and give them time. If the calf is alive and the mother is not suffering or in danger of sepsis, there is no reason why these cases should be hurried. We do not even have need of concern as to the life of the fetus as we would in the case of the mare. I have seen obstinate cases that we have watched and treated for a week or ten days without resorting to surgical interference and sudden have the cervix dilate making it possible to deliver a live and normal calf or in some cases the calf being born without aid. So "watchful waiting" is perhaps the first step.

Belladonna Worthless

As to mechanical means of dilating, it is quite natural that we try everything that has been suggested. My personal opinion is, that belladonna ointment or any other ointment that we know of today has absolutely no value so far as the dilating or relaxing action of

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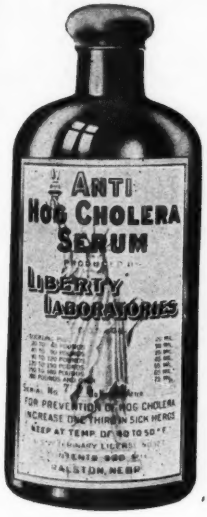

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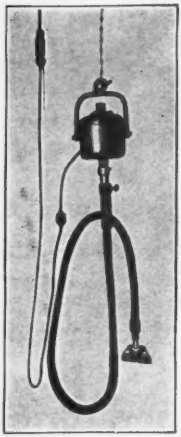

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the drug is concerned. On the other hand, any manipulation of the cervix with either the bare hand or with an ointment on it may be just enough irritation to produce the desired reflex and cause the cervix to dilate in a few hours as if by magic. But I repeat, such cases will dilate just as well by using nothing but the bare hand, shaping the fingers in a cone, and rotating patiently.

Sponge Pessary Has Merit

There is one mechanical device that in some cases really appears to have merit. That is, to sterilize a large sponge or soak it well in an antiseptic, dry it in an oven, roll it very tight, place it in the cervical canal and then moisten. The swelling of the sponge in some cases seems to have a mechanical influence when the cervix is not too rigid.

Manipulation of Endocervix

It is well to keep in mind that the cervix dilates from the endocervix outward and if we can by patient rotation of the finger or any small smooth instrument dilate the cervix sufficient to once pass the hand through and complete the dilation from the inside out (perhaps after a time by getting both hands in), there will be more satisfactory results. In practice, it is our custom, where distance permits, to see such cases about twice a day and continue to do what we can to excite dilation.

MINERALS FOR LIVE STOCK

In reading your article on "Minerals for Livestock" in the April number of VETERINARY MEDICINE I notice you advise the use of finely ground limestone to supply the calcium. Would this be the kind quarried at Marble Cliff, Columbus, Ohio, or the so-called Tennessee rock which is taken from a deposit at Mount Pleasant, Tennessee? This is of a reddish brown color. Would also like to know if the calcium is available in these rocks. Would the percentage of sodium chloride in the formula given be safe to be fed to swine? Thanking you for this information, I am, R. H. G., Ohio.

Reply by Professor Hadley: If I am correctly advised, the limestone quarried at Marble Cliff near Columbus, Ohio, consists largely of calcium carbonate ($CaCO_3$), while the product of the deposit at Mount Pleasant, Tennessee, is largely calcium phosphate (Ca_3PO_4). The latter is commonly known as rock phosphate, or floats, and contains from 25 to 30 per cent of calcium phosphate, or about 11 per cent of phosphoric acid.

It is a well known fact that rock phosphate is relatively insoluble in water, but this does not mean very much, because there is enough hydrochloric acid in the stomach of an animal to dissolve the calcium phosphate, and thus make it available for the use of the animal.

From experiments conducted at the Wisconsin Agricultural Experiment Station under the direction of Professor E. B. Hart, it has been found that calcium carbonate is more suited for animals during the winter months when they are being fed heavily on grains, all of which contain a sufficient quantity of phosphorus, than is calcium phosphate. On the other hand, calcium phosphate is better for animals on pasture, and those which do not receive a ration containing grain. These experiments showed that there is something in fresh, green oats, as compared with dry oat straw, that increases the amount of calcium assimilated. This factor, whatever it may be, is resident in green oats and grasses and is also present in cod liver oil. It makes these substances capable of changing negative calcium balances to positive balances.

As a general rule it may be stated that any grain ration will always be low in lime content, therefore, extra lime should be added to the ration of livestock, especially when they do not have access to green feeds, which contain plenty of calcium for the needs of the animal body. Undoubtedly steamed bone meal contains more available lime than raw limestone or wood ashes, but it costs more. Of course, one should always provide clover or alfalfa, either green or in the form of hay, for dairy stock. When either one of these feeds is available throughout most of the year, it does not seem advisable to go to the expense of purchasing lime in any form for dairy cattle.

Now, in regard to the formula in the article entitled, "Minerals For Livestock," will say that the percentage of sodium chloride given would be quite suitable for hogs. It is a common practice, however, to allow hogs free access to salt at all times. If this is done, or salt is mixed with the feed, as some swine producers prefer, the formula should be altered accordingly. You will be interested to know that in experiments conducted at the Wisconsin Station with hogs on alfalfa pasture in which ground limestone, rock phosphate, and steamed bone meal were fed to different lots that practically no difference was noted in the rate of growth of the hogs or the size of the litters. In pen fed animals there would be a noticeable difference.

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Looking Backward

A Look Into the Past Unfetters the Mind, Gives a Clearer Conception of the Present, and Tends to Strengthen Our Confidence in the Future

Dr. J. F. DeVine of Rhinebeck, N. Y., has moved to Brooklyn and has become an assistant in the practice of Dr. Roscoe R. Bell.
(Am. Vet. Rev., Dec., 1900.)

During the last decade of the 19th century hypodermic injects of carbonic acid in solution (2%) was heralded as a sure cure for tetanus in horses. It's remarkable how quick we forget these sure cures, and let our patient go right on and die.

The old authors of medical literature displayed such an amazing amount of confidence in their unproved theories that the public can hardly be blamed for having sought refuge in other cults from time to time as true facts were gradually disclosed.

Only a few decades ago medical literature was a comedy of contradictions and immature conclusions; today there is nothing seriously entertained except facts well proved.

"Apoplexy" is one of the oldest medical words. It was used by Hippocrates to designate the same condition for which it is used today. "A stroke caused by hemorrhage of the brain that ends in paralysis."

The first clinic of the American Veterinary Medical Association was held in conjunction with the annual meeting of 1898 at Omaha. The exhibits were a roarer, a ridgling and case of purulent sinusitis, all horses. From the esthetic standpoint the exhibition was called an abomination by the late Dr. Jos. Hughes.

Just one hundred years ago, iodoform was discovered by Serullar, and in the same year, 1822, the stomach pump was invented by Bush.

Dr. H. F. Steele, formerly of New York City, is stationed at Santiago, Cuba, in charge of the quartermaster horses and mules that are unassigned and also of the veterinary hospital. (Am. Vet. Rev., Aug. 1900.)

This is Lt.-Col. Steele, V. C., U. S. A., about to be retired for physical disability.

The word "abscess" is derived from the Latin "abscedere," to separate.

In 1856 Bouley defined abscess as "A collection of pus in an abnormal cavity formed at the expense of the tissues.

Foot and mouth disease was first described by Ruini and Francini, whose works were published in France during the last years of the 16th century.

In 1900 a collie bitch belonging to J. Pierpont Morgan gave birth to 27 puppies, breaking the record of 23 pups whelped by a collie bitch in Scotland some years before.

Before the middle of the 18th century and for some decades after that time surgery was regarded as a low occupation. The learned physician of that period treated the surgeon with contempt.

The first time a cow was exhibited for clinical purposes at an association meeting in this country was at Atlantic City in 1901. The demonstration consisted of methods of casting cows for various purposes, by Dr. J. C. Michener, and was described by the reporter of the clinic as "quite interesting."

SWEET MILK DELIVERED IN FRANCE FROM ILLINOIS

During the Paris Exposition 22 years ago, Mr. Gurler, of DeKalb, Illinois, shipped milk from his farm at that place to Paris which, except in a few instances during the hot days of August reached its destination in good condition. The milk was usually 17 days en route and was generally delivered for consumption as sweet milk three or four days after arrival. It only arrived slightly acid a few times and then only after some undue exposure or delay in transit. Milk experts were at first hard to convince that only cleanliness and cold were used to preserve these exhibits but after rigid investigation awarded gold medals to the exhibitors.

SPEAKING ABOUT OLD HORSES

During the year 1888 or thereabouts the Chicago Tribune reported the death of a horse at the age of 63 years. The horse was the property of Dr. Mather, 31st and Wabash avenue, Chicago, Ill. This remarkable animal was reported to have been used by the doctor as an officer's mount during the Civil War, and then as a buggy horse for years after the doctor reentered civil practice. A few of us, however, knew that the doctor had changed horses during the seventies unnoticed to his many friends. The new horse was a "double" of the old Civil War mount, and as years went on, one after another of his neighbors became amazed at the apparent longevity of the old white horse that had now become a part of the permanent scenery of the neighborhood. The doctor who was a comedian by nature jokingly allowed the misinformation to prevail for years and until the new horse had become the most famous "old horse" on record. Dr. M. H. McKillip could tell the full story. We wonder what is the real truth about the old protege of our New York colleagues that is now claiming the record for equine longevity.

Veterinary practice will progress or decline in strict obedience to the skill we put into it; in other words it will survive or perish under the immutable laws of commerce.

The veterinarian has been more successful in protecting domesticated animals against disease and subnormalities than the medical profession has been with the human race. The percentage of young men rejected for military service during the recent war was approximately the same as that during the Civil War, showing that there has been little improvement in our physical condition in 57 years.

Frenzied finance was a pastime of the A. V. M. A. way back in 1900 when Professor W. L. Williams charged a publication committee with having bankrupted the association in the short space of three years. An assessment of $5.00 per member failed to meet the deficit and the association had to forego the pleasure of printed proceedings for two years, the report goes on to state.

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ANNOYING GRANULATIONS FOLLOW SEVERED PERFORATUS

On April 10th I was called to treat an 18 year old mare in good condition that had sustained an incised wound from a hay knife four inches below the carpus of the off fore leg. On examination I found that the perforatus was almost but not completely severed.

The wound was treated with tincture of iodin and bandages for three days and thereafter with a good antiseptic dusting powder. Instead of healing it soon began to enlarge and develop very annoying exhuberant granulations. These have been chemically and surgically treated and the borders touched up with nitrate of silver every two or three days without benefit. The wound still shows but little tendency to heal. Could you suggest any better treatment?

Reply: The granulations continue to form and fail to mature into scar tissue because they are attached to poorly nourished and movable structure—the tendon. Such wounds eventually heal up but only after a surrounding reaction that leaves an ugly and large blemish. To hasten normal cicatrization with minimum amount of new tissue it will be necessary to immobilize the limb for a week or two, or even longer, and to avoid molesting the granulation beyond the level of the skin. In fact it is better to leave them protrude a little than to devitalize them with caustics.

The immobilization may be effected with any of the classical leg braces fixed at the toe of the shoe and running up over the dorsal face of the leg, a fenestrated cast of plaster of Paris, or an improvised splint. Mild astringents only should be applied to the wound. Regeneration will be slow on account of the mare's age.

More Fly Repellents

℞ Crude carbolic acid
Oil of tar
Cotton seed oil, aa.....1 gal.
M. et sig.
Apply as a fine spray.

℞ Powdered resin
Shaved soap
Fish oil
Oil of tar
Kerosene aa .....1 part

Boil the resin, soap and fish oil with enough water to dissolve the resin, stir well with three parts of water and add the kerosene and oil of tar. Sig. Apply as a spray.

Discussions, News, Personals

"WRINKLES, SHIELDS AND SWIRLS"

Veterinarians are frequently requested to prescribe or operate to overcome or relieve wrinkles, shields and swirls. The skin of swine if very similar in its general structure to that of other animals, with the possible exception that the dermis is more loosely attached to the underlying structures. The loose dermal attachment permits of the deposit of large quantities of fat, particularly in the large type of swine.

Wrinkles

Wrinkles are corrugations of the skin and occur particularly in mature swine that have been previously fat. The excess of fat disappears from the subcutaneous tissue and causes the skin to wrinkle. Wrinkles in swine can usually be overcome by fattening them. In some old swine and more especially in the bacon type there may be some digestive derangement that must first be overcome.

Shields

Shields are vestiges of the original wild hog and served as a protection while in combat. They are prone to occur in mature or aged swine and particularly in boars. These masses are composed of fat meshed with fibrous tissue. The fibrous tissue forms the framework of the mass. It occurs in considerable quantity, and diminishes or prevents the absorption of the fat with the effect that shields may persist after the animal becomes quite thin. As the animal becomes older the fibrous tissue in the shields increases in quantity and the masses become so dense they cannot be made to disappear by starving.

It may be possible to arrest the development of shields in the younger animals by frequent and persistent massage, but these masses usually cannot even be reduced in mature animals.

Swirls

Swirls are whirls or cowlicks, which occur in the skin, particularly on the back of rump. Swirls are much less common now than during the earlier history of the breeds, as breeders have been trying to eliminate this fault. The price of breeding swine having swirls is lower than those without them. Swirls can be removed surgically but whether or not this should be done is questionable, because there is an inherited tendency to transmit swirl which the surgical operation does not remove.

The operation for removal of the swirl consists of dissecting out the entire affected area. Done while the pig is relatively small there is no complication and the wound heals without a scar.—A. T. K.

CHRONIC PERFORATION OF THE SKULL IN A MULE

I am sending herewith a picture of a mule that was injured six or eight months ago which caused an enlargement between eyes that was blistered with Caustic Balsam. The owner then skinned the place and must have injured the periosteum as the bone separated around the edge of the blistered area and finally the whole mass came out leaving an opening about the size of the crown of a hat.

The mule so far hasn't suffered any inconvenience from the opening, is hardy, eats well, and does as much work as ever.

I thought this might be of interest to your

Photo by Dr. Fred H. Steele, Scottsboro, Ala.

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readers.

Comment: Perforations of the skull are generally due to fracture, the displacement of which is not noticed by reason of being slight or by being masked with the swelling associated with the traumatism. When the bones are "set" by prying them up into their proper level they heal well enough, but when the displacement is not corrected sloughing is a very common result, especially when the sunken area is large. The skin in this case was undoubtedly underrun with pus and when it was punished with such a strong caustic sloughing was a very likely result.

THREE LEGGED COLT

I am sending you a picture of a freak colt, it being a three legged or equine triped. It was foaled by a large draft percheron mare, belonging to Mr. Jacob Raquer, Arcadia, Indiana.

The colt was healthy; when born was not valued highly by owner and was not given much attention. It lived about seventy-two hours. It was never able to get upon its feet,

but seemed to be normal otherwise than the missing limb. The scapula was perfect and the stump was smooth and completely covered by skin and hair. It moved the stump very freely in making efforts to move its body.

This is the first three legged animal I have ever seen while I have been in the profession and thought it might interest others in the profession.—W. V. Billhymer, Arcadia, Ind.

SEMI-SOLID BUTTERMILK FOR NECROTIC ENTERITIS

Semi-solid buttermilk having been suggested as a valuable article of food for pigs affected with intestinal disorders, a herd of some two hundred affected with necrotic enteritis were given a thick slop made with this product and shorts. The pigs had been fed mill feed, corn and water and were doing well until the disease appeared among them, and they began showing the typical symptoms of diarrhea, unthriftiness, weakness and emaciation. After this feed was begun there were losses for a week but thereafter the losses ceased and the whole herd improved until at the end of four weeks all were thrifty again and none showed any evidence of disease. Each pig received two doses of mixed bacterins in addition, and the owner who yielded to this plan only after considerable persuation on account of his past experiences with this disease, now agrees the expenditure was justified.—D. A. K., Mo.

HYDROPHOBIA DRAMA AMONG THE THRILLERS

Rabies is the new thrill of the stage. The drama, which has been running in a London theater, portrays an outbreak of small pox in a garrison town that necessitates the vaccination of the regiment. The vaccine arrives. A spy affixes the labels on bottles containing a deadly rabies virus. Then the curtain descends.

When it rises for the next act 1,500 men are raving in the courtyard. One of them appears on the stage and remains there quite long enough for the most of the members of the audience. In the end the regiment is shot down for self protection. It is not stated whether this amusement was passed by the censors.

TREATMENT OF MECHANICAL PNEUMONIA FROM DRENCHING

In the January issue you published a case report from F. H. B., Kentucky, describing a fatal case of mechanical pneumonia that ended in a lawsuit.

For this trouble, I have always given my cases one half grain doses of pilocarpine hypodermically, repeated every half hour until relieved. I am sure if our Kentucky colleague had used this treatment there would have been no occasion to institute legal proceedings against him. His case would have been cured.—J. F. S., Minn.

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FOR SALE—Anti-Fis-Tract is a proven remedy for all fistulous tracts, actinomycosis, chronic abscesses, etc. Full directions. $1.00 per dozen. Charges prepaid. I. G. Wimsett, D.V.M., Winfield, Kans.

I HAVE A FEW PAIR OF REGISTERED SILver black foxes for sale. This is the center of the black fox industry of the United States. Dr. F. U. Steele, Muskegon, Mich.

FOR SALE—Established practice in Northern Illinois, town of 600. No competition, run 5,000 annually. Must sell immediately. Write for particulars. Address No. 686, care of VETERINARY MEDICINE.

FOR SALE—A rapidly growing mixed practice in the best city in Minnesota; including full equipment and small animal ambulance. Am going to Asia to do colonization work for 5 years. If desired will lease very attractive home and hospital. Address No. 684, care of VETERINARY MEDICINE.

FOR SALE—Simplicity Operating Table for horses. Three movements; locks in any position. Good as new. Address J. C. Jones, South Charleston, Ohio.

POSITIONS, LOCATIONS, ETC.

POSITION WANTED—Successful graduate. Married. Desires position as practitioner. Contemplating later partnership or purchase of practice from retiring veterinarian. Go anywhere. Give full details, stating salary. Address No. 685, care of VETERINARY MEDICINE.

VETERINARY PRACTICES, POSITIONS, ETC., furnished and handled for sale in 48 states. Physicians, dentists and nurses furnished and located. Drug stores for sale and drug positions in all states. F. V. Kniest, Peters Trust Bldg., Omaha, Neb. (Guaranteed Service.) Established 1904.

WANTED—Male Skye terrier, weighing sixteen to eighteen pounds; age eight to twelve months; color, light blue. Address H. H. Blahut, 333 Benton St., Hot Springs, Ark.

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LET US TAN YOUR HIDE—Cow and Horse hides for fur coats and Robes. Cow and Steer hides into Harness or Sole Leather. Catalog on request. We repair and remodel worn furs; estimates furnished. The Crosby Frisian Fur Co., Rochester, N. Y.

"QUICK COLLECTIONS"—Everywhere. Live wire firm! Established 27 years. William H. Dodd, 87 Nassau St., New York. Don't wait, send us your bills today!

NICKEL PLATING—Every Veterinarian has some instrument which needs replating. Send them to us. We will make them like new at a moderate cost. Nelson Plating Co., Morris, Illinois.

AMERICAN FOX AND FUR FARMER—Instructive magazine devoted to raising silver black foxes and fur farming. Best reference book in existence pertaining to this industry. Sample copy free. 406-V Arcade Building, Utica, N. Y.

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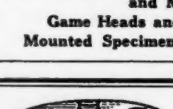

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The identification tag for animals that IS satisfactory. Used by the B. A. I., most states, and hundreds of veterinary practitioners. Write for sample and price. An ear mark for every purpose. M. H. STOLL Colorado Springs, Col.

Dr. George W. Blanche has accepted a position as a branch manager for the Fort Dodge Serum Co., with offices at 816 South San Pedro Street, Los Angeles, Calif.

Dr. Peter H. Canakis relinquished practice at Milbank, South Dakota, to take a position in the state veterinarian's office at Pierre.

Dr. W. W. Bronson is now located at Anamosa, Iowa, having moved there recently from Wyoming.

Dr. Kirtley Sears is engaged in practice with Dr. E. D. Criswell at King City, Missouri. Until recently, Dr. Sears was located in St. Joseph, Missouri.

Dr. Fred Cox has located in practice at Persia, Iowa.

Dr. A. V. Barbee is now engaged in practice at Siloam Springs, Arkansas. Dr. Barbee is a graduate of the St. Joseph Veterinary College, 1915. He served in the Veterinary Corps during the late war.

Dr. I. C. Mattingly, formerly of St. Louis, Missouri, is now practicing at Concordia, Kansas.

Dr. W. H. Ashley has returned to Colfax, Iowa, after an absence of several years and has re-established himself in practice there.

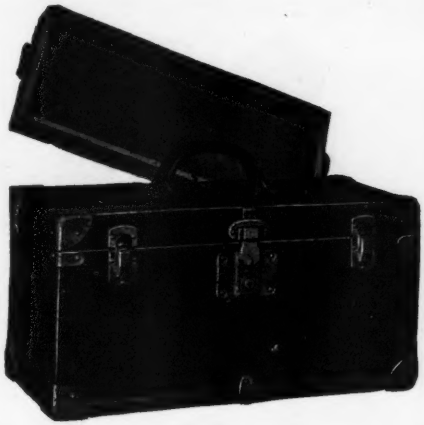
Dr. H. N. Holmes is now located in Lanesville, Illinois, having moved there recently from Buffalo, Illinois.

Dr. Russell Meyer, a graduate of the 1922 class of the Iowa State College, is located at Granville, Iowa.

Dr. J. H. Crawford has moved from Cornell to Arthur, Illinois.

Dr. Lyman R. Vawter is the new president of the Nevada State Veterinary Association, having been elected to that office at the last association meeting. Dr. Vawter is a graduate of the Kansas City Agricultural College, class of 1918.

Dr. F. K. Voss has built an attractive and modern hospital at Antigo, Wisconsin.



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THE EAGLE CO.

(Continued from Page 383)

when his chickens are sick to administer Epsom salts, it will overcome a lot of his trouble. We recommend a pound to one hundred hens, which is in the neighborhood of two-thirds of a teaspoonful to a hen. Some people administer it in the drinking water. I have more compassion for the hen, I put it in the mash and wet the mash and the hen is hungry and eats it up.

Copper Sulphate Purifies the Drinking Water

I never recommend the use of permanganate of potash. I believe it oxidizes when it comes in contact with animal matter so rapidly that in a few hours its value is gone. For that reason, we use copper sulphate. I do not prescribe copper sulphate as a medicine in any way, but to keep the water pure. It is very cheap. An ounce to ten gallons of water will supply a sufficient amount to keep the water absolutely pure. I am not afraid to use it in metal vessels, although I prefer to use it in crockery ware. The average farmer has it if he sprays his apple trees. He calls it blue stone.

Tuberculosis an Avian Scourge

Tuberculosis is rampant through this section of the country. I understand it is very virulent through your state. I have an idea the state of Wisconsin has done more on tuberculosis than any other state. If I were going to give a recommendation, I would say this: tuberculosis is the easiest thing to diagnose. We find extreme emaciation of the bird followed by lameness. Many symptoms show particularly in the liver and spleen. There is no cure but the farmer can clean up and clean out and start over. He can get new stock. He might go so far as to take eggs from that flock and go over on another piece of land and start raising chickens and go back on the land where the tuberculosis was. If he cleans up I think he can get away from the disease and that is the recommendation I can give anybody for tuberculosis in the flock.

Cholera Rampant

Cholera is, of course, very rampant. Cholera is often accompanied by pneumonia which complicates matters a great deal in diagnosing the situation without taking the bird into the laboratory. I don't know how many of you men can look at a chicken and diagnose its disease. As a rule cholera infection will show the greenish yellow feces. You will also find feces in bunches and this condition goes rather rapidly through a flock which differentiates it from typhoid. You will find the liver gener-

ally shows red spots and also the heart shows bright red spots. In poultry typhoid which may give you the same similar symptoms as cholera you find the bird becomes pale and the disease is chronic. A bird dies here and there and in post mortems you will find large livers and grey specks.

Diarrhea Scares Farmers

Diarrhea scares every farmer in the spring. In the state of Indiana the farmer raises about fifty-five chickens out of every one hundred he hatches, which is one million two hundred thousand dollars' loss. Now white diarrhea is something you can pretty well determine by the test on the adult females and also on the male, thereby eliminating the carriers of the disease with a very high degree of accuracy. It is generally too late to be done when the disease breaks out and the farmer comes to you with the problem, or the poultry man comes to you. Most diarrheas in little chicks are not caused by bacillary white diarrhea at all, it is generally caused by over-heating, chilling, dampness or too early feeding or something of that kind. I think the average chicken man and particularly the woman on the farm, over-feeds the chicks and over-feeding is more dangerous than under-feeding. It has been mentioned regarding dogs and I think it applies to you and me and all.

If we can determine by asking questions as to whether or not these chicks die because of the fact that they are improperly managed, then we can look for bacillary diarrhea. In bacillary diarrhea you will find some very definite and distinct post-mortem lesions. You will find the liver large, streaked with bright red; the bright red streaks come from the enlarged liver coming in contact with the ribs of the chicken. Where the ribs come in contact with the liver they generally make little, light streaks in the liver. You will also find congested red spots, pustules in the lungs, on the heart and in the intestines. I think you will have to watch out you don't confuse that with tuberculosis.

Now if you want to study poultry diseases, as good a book as I know is Ward & Gallagher's digest of domestic birds. It is a particular book written for men who understand veterinary medicine. The average layman can't use it because it is too technical. I am sorry there isn't a copy of it here. Ward & Gallagher's is the best book published. I think for the average layman you will find Dr.

(Now turn to page 419.)

Antiphlogistine

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EQUINE BOVINE CANINE FELINE PRACTICE

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"Jack and Jill went up the hill,
Like dutiful son and daughter;..
Now Jack has typhoid, Jill is ill—
They didn't boil the water."

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PEORIA ILLINOIS

ASSOCIATION MEETINGS

ARKANSAS VETERINARY ASSOCIATION

The semi-annual meeting of the Arkansas Veterinary Association was held at the Marion Hotel Friday, June 9. Those in attendance state that it was the most interesting and harmonious meeting that has been held in several years.

The address of welcome was given by Honorable Ben D. Brickhouse, Mayor of the City of Little Rock, who stated in part that the veterinary profession has a service to perform and that he had always favored the employment of veterinarians in municipal health work; the veterinarians were diplomatically adversely criticized for their indifference, citing his own experience in that during his three years of office not a single veterinarian or veterinary association had suggested in any manner the importance or desirability of having a veterinarian engaged in conducting certain lines of municipal health work. He urged the importance of organization, stressed the importance of publicity through the various daily papers and agricultural publications by members of the profession themselves, furnishing articles or material. Mayor Brickhouse made many other timely and constructive suggestions, which space prevents mentioning.

Dr. W. A. McDonald, inspector in charge tick eradication force, in a few well chosen remarks responded to the address of welcome.

Dr. D. F. Lucky, livestock commissioner, National Stock Yards, Illinois, delivered a stereopticon lecture on tuberculosis, which was very helpful and highly appreciated by all present.

Dr. W. F. Miller, Stuttgart, Arkansas, being unable to attend forwarded an excellent paper on "Municipal Testing Dairy Herds." He made a most emphatic statement that the control and eradication of tuberculosis is a social problem worthy of our most serious consideration. He adduced figures, showing that 3,000 human beings die annually from tuberculosis and that 25,000 people are totally or partially incapacitated by this disease in Arkansas; 10% of the patients in one sanitarium at Denver being from Arkansas.

Dr. Earl Kittrell, Augusta, Arkansas, presented in a very able manner a paper entitled "Practice in the Field." He urged all the various forces engaged in encouraging poultry and stock raising to co-operate in promoting

ASSOCIATION MEETINGS

a common interest.

Dr. H. J. Hayes, Helena, Arkansas, read a very highly interesting paper on rabies. He brought out some very fine points in differential diagnosis of this condition.

Dr. C. D. Stubbs, assistant state veterinarian, Little Rock, Arkansas, in a few well chosen remarks gave his experience of some years duration in the observance of the occurrence, dissemination and prevention of anthrax. This disease is highly feared in the infested districts and he suggested that it is almost as important to treat the stock owners, in order to allay their fear, as well as the animals.

Dr. H. W. Wilson, Helena, Arkansas, has found that since the Arkansas razor-back hog has been replaced by the pure-bred animals that swine practice is adding considerable revenue to his yearly income, in a paper discussing caesarian section of sows. The difficulty in administering anesthesia in these cases without intelligent assistance has been met by entrusting this to some cool-headed farmer, with a minimum risk.

Dr. N. J. Pearce, Monticello, Arkansas, requested information regarding losses of horses and mules, which appeared to be due to Buffalo gnats. It was disclosed that losses had been experienced from gnats this season in some eight or ten counties of Arkansas, being confined to the low-lands; losses probably being due to the injection of a toxin which deranged heart action, produced flatulence, which if not relieved results in ruptured stomach. No one reported losses of animals due to excessive inhalation of the gnats into the respiratory tract.

President Hubert Shull read some extracts of cures recommended in an English book published in 1678, among other ludicrous treatments recommended the following is an example for mad dog bite; "Take hob-goblin, periwincle and box leaves, each a handful; first mince them small, then stamp them very small in a stone mortar and with milk or beer administer it both at the change and full of the moon."

Dr. H. W. Wilson, Helena, Arkansas, was elected president; Dr. Earl Kittrell, Augusta, vice-president; Dr. Joe H. Bux, Little Rock, secretary-treasurer.

The next meeting is to be held at Little Rock between the 9th and 15th of October.—Joe H. Bux, Secretary-Treasurer.

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A liquid antiseptic preparation of Gum Camphor, Metallic Iodine, and Phenol Crystals for the correction of all conditions which retard the healing of wounds.

The discovery of the correct proportion in which to combine these agents to free the resultant compound of the caustic and irritating effects, so prominent a part of the actions of Phenol and Iodine, has produced the ideal agent for wound healing. None of the good effects is retarded, being enhanced instead, and the compound exhibits all the beneficial actions of its three ingredients without any of their bad effects.

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so promptly and carries it along so rapidly that scar tissue has no time to form. Its stimulative and astringent properties are balanced so that exuberant granulations never form. It destroys infection without destroying tissue. It stops pain and itching, cools hot, feverish lesions, and stimulates normal cell proliferation, aiding nature at every turn.

Iocamphol is economical, small quantities to surfaces twice daily. Very concentrated, easily carried. It is the most remarkable development for wound healing of recent years. If you try it on a few cases, you'll be convinced.

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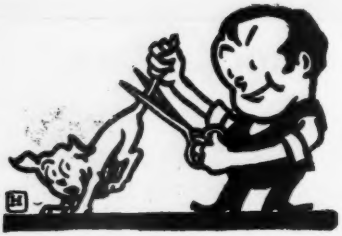

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ASSOCIATION MEETINGS

CENTRAL IOWA MEETING

The Central Iowa Veterinary Medical Association met at Fort Dodge, Iowa, on May 25, carrying out an interesting program on a variety of subjects of current interest.

The meeting was attended and addressed by A. T. Kinsley, president of the A. V. M. A., Dean C. H. Stange, of the veterinary division of the Iowa State College of Agriculture, and L. A. Merillat, Managing Editor of VETERINARY MEDICINE.

J. H. Lynch, of Fonda, was elected president; and Howard L. Shore, secretary-treasurer.

In the evening the members were the guests of the Fort Dodge Serum Company, and were entertained by a sumptuous banquet, dance, and musicale, that was enjoyed by more than 150 members and wives.

CALIFORNIA STATE VETERINARY MEDICAL ASSOCIATION

The California association just closed a very successful meeting. There were nearly 100 in attendance.

The next annual meeting will be held in San Francisco, June 23. The following officers were elected: John L. Tyler, president, Huntington Park; Oscar Kron, vice-president, San Francisco; J. P. Bushong, secretary, Los Angeles; Jas. A. Boyd, treasurer, Milpitas.

The special feature on the opening day of the examination of normal and abnormal female genital organs of cattle, was an innovation out here, which was made possible by the co-operation of the B. A. I. inspector, who supplied the material exhibited.

The state board of examiners also held a session at this time, eleven candidates presenting themselves for examination, seven of whom passed.—J. L. Tyler, President.

The Idaho Veterinary Medical Examining Board met at the State Capitol Building, Boise, Idaho, May 9. Thirteen candidates were examined for license to practice. The board consists of Drs. R. B. Hurd, Payette, president; H. E. MacMillan, Filer, secretary; and E. J. Powell, Lewiston, treasurer.

The fourteenth annual meeting of the Tennessee Veterinary Medical Association will be held in Memphis, Tennessee, July 26-27, 1922. C. E. Kord, Sec'y.

ASSOCIATION MEETINGS

THE PICNIC OF THE CENTRAL ILLINOIS VETERINARY MEDICAL ASSOCIATION

The annual picnic of this association will be held this year at Miller Park, Bloomington, Illinois, July 26. In view of the large crowd expected, it has been decided by the committee of arrangements to make this a basket picnic and the command comes out from headquarters not to forget the basket. It is predicted that this will be one of the largest gatherings of veterinarians ever held by this organization, which during former years, has made this occasion a memorable one.

The Mississippi Valley Veterinary Medical Association, one of the oldest local associations in the country, whose influence extends over the river counties of Northern and Central Illinois, where the hog vaccination situation has been acute for a number of years, is doing good work for its members, by bringing about a more harmonious relation with swine breeders. Its officers are: J. H. Kritchel, president; J. A. Campbell, vice president; E. C. Eckley, secretary-treasurer. The secretary's address is Monmouth, Illinois.

SOUTHEASTERN STATES VETERINARY MEDICAL ASSOCIATION

The sixth annual meeting of the Southeastern States Veterinary Medical Association, which was held at Nashville, Tennessee, in March, was one of the best conventions that the association has ever enjoyed. The attendance was unusually large considering the present financial situation of the country.

Program

Dr. A. T. Kinsley, president of the American Veterinary Association, addressed the convention on the "Veterinarian's Future." His views were very optimistic and were substantiated by convincing facts about the profession.

A most interesting and instructive paper was presented by Dr. Louis A. Klein, University of Pennsylvania, on "Mastitis."

Other features of the program were: "Scours in Young Cattle," by Dr. M. Jacobs; "Experience with Recent Outbreak of Anthrax," by Dr. C. C. Brown; "Tuberculin Accredited Herd Campaign in Virginia," by Dr. J. G. Ferneyhough, and "Practitioner's Relation to Sanitary Control Work," by Dr. G. R. White.

A unique feature of the program was a moving picture illustration and discussion of "In-

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CHICAGO ILLINOIS

testinal Parasites in Swine," presented by Dr. E. I. Smith, through the courtesy of Dr. B. H. Ramson, Chief of Zoological Division, B. A. I.

A Clinic was held at the hospital of Dr. W. M. Bell, an interesting feature was a discussion and treatment of sterility by Dr. J. F. DeVine, Goshen, New York.

The convention was presided over by President Dr. M. R. Blackstock. Mr. J. O. Tankard welcomed the association on behalf of the city of Nashville, to which Dr. W. A. Barnette responded.

The following officers were elected and installed for the coming year: President, Dr. W. M. Bell, Nashville, Tenn.; 1st Vice Pres., Dr. W. K. Lewis, Columbia, S. C.; 2nd Vice Pres., Dr. M. Jacobs, Knoxville, Tenn.; 3rd Vice Pres., Dr. A. L. Hirlemen, Atlanta, Ga.; Sec.-Treas., Dr. John I. Handley, Atlanta, Ga.

Dr. J. G. Ferneyhough acted as toast-master at the banquet held at the Hermitage Hotel.

The growth of the association is shown by the election of thirty-two new members and by the interest displayed at this meeting.

John I. Handley, Sec.-Treas.

At a meeting of the Orange Belt Veterinary Medical Association, held in Los Angeles last month, the following officers were elected:

Dr. A. W. Hubbell, San Bernardino, president; Dr. T. N. Davidson, Ontario, vice-president; Dr. Hal C. Simpson, Pomona, secretary-treasurer.

HELPFUL RESOLUTIONS

Adopted by McLean County (Illinois) Better Farming Association, Relative to Farmer Vaccination of Hogs.

I. In view of all the information obtainable regarding the vaccination of swine from the department of agriculture, bureau of animal industry, Washington, D. C., the university of Illinois, the state veterinarian's office of Illinois and other states, the live stock department of the Illinois agricultural association, serum manufacturers and all veterinarians in general, and since the McLean County farm bureau stands for a constructive agricultural policy it seems that it would be very unwise to advocate farmer vaccination.

II. The above **shall not** be so construed as to mean that the farm bureau wishes to prevent anyone who has confidence enough in his own ability and wishes to take the responsibility of vaccinating his own hogs. The

Farm Bureau should render the customary service of locating a source of serum supply and investigate prices and quality but assume no financial or other guarantee.

III. It should be kept uppermost in the minds of both the live stock men and the veterinarians that one cannot carry on without the good will and co-operation of the other. It should be the policy of the live stock members of the farm bureau to encourage the conscientious, capable veterinarian who is trying to render the stockmen and the community a service at a price which will make his practice remunerative to himself and at the same time be reasonable to the farmer.

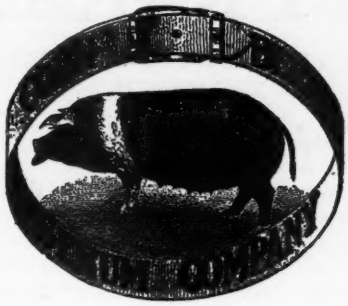
We are informed that today in all the veterinary schools of the United States there is a total of about 170 Freshmen. The outlook for graduate veterinarians in the next few years is indeed very poor. It seems that these men, after surveying the field, come to the conclusion that there is not sufficient inducement in the veterinary business for them to go through the preparation that is required to secure the veterinary training.

On the other hand when a veterinarian is incompetent or seems to have adopted the policy of rendering as little service as possible and charging the highest fees the traffic will bear it is time for the community to remonstrate and if no suitable understanding can be arrived at encourage another veterinarian to come in.

IV. Inasmuch as there has been co-operation between the McLean Co. veterinarians and the McLean county farm bureau in the past, we have every reason to believe that co-operation in the future may be expected. To this end we recommend that a committee be appointed to meet with a similar committee from the McLean County Veterinary Association to arrive at some general policies regarding the vaccinating question which will be fair and satisfactory to both. This committee to report to the board of directors for their approval at their next meeting.

V. Since a large per cent of the vaccinating charge must go for overhead such as mileage to two widely separated places or two trips to the same locality, loss of time due to handling of hogs, outstanding accounts which must be carried and a certain per cent which are never paid, some veterinarians have expressed themselves that if these charges could be eliminated they would give the farmer the benefit.

THE



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It has a higher microbicide power than carbolic crystals and yet does not harm the tissues.

It has been proved specific against the lesions of Roup in chickens.

It is very effectual in controlling post-operative hemorrhage.

It dries up collar sores promptly and is par-excellence the best dressing for barb-wire cuts and similar traumitisms treated as open wounds.

Trial bottle for 75 cents. One gallon by express F. O. B. Philadelphia for $2.00. Send for booklet explaining its therapeutic uses and prices in larger quantities.

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PHILADELPHIA

To this end in some places there has been proposed so-called vaccinating rings. If several farmers in a given locality will arrange to have their vaccinating done at the same time, have their hogs ready and furnish plenty of help and pay cash, a considerable saving can be had.

If any farm bureau members should decide to form such a ring the farmer advisor should give all assistance possible in helping them to perfect the necessary arrangements.

INDIANA VETERINARY COLLEGE GRADUATES TWENTY-ONE STUDENTS

The annual commencement exercises of the Indiana Veterinary College were held Friday, May 19, 1922, when a list of 21 senior students, who had successfully passed the final examinations, were given the degree of the institution. The graduates are as follows: Carlos C. Byler, Henry O. Chapman, Murray J. Dills, Hall A. Dockstader, Dolie Hancock, Guy P. Hatchett, Ralph B. Hipenbecker, Walter F. Holmgren, Troy S. Hopkins, Joseph G. Johnson, Emmett E. Keigan, Norton H. Larson, Fred W. Milke, Ralph G. Routon, Francis D. Sexton, William P. Tague, Thomas W. Todhunter, Jasper B. Vance, Jasper C. Vance, Lee A. Wilcox, and Ary S. Willard.

Dean Craig reports favorably upon the quality of the graduates and holds out promising prospects for their success, together with an optimistic attitude toward the future good work of the college.

COMMENCEMENT EXERCISES AT THE ST. JOSEPH VETERINARY COLLEGE

The annual commencement of the St. Joseph Veterinary College was held in the college auditorium Wednesday, May 17, before a large audience. Among the guests were President A. T. Kinsley of the American Veterinary Medical Association, Dr. John S. Koen, of Bloomington, Illinois, and Dr. G. I. Gibson, veterinarian of the St. Joseph Live Stock Commission. The degrees of the college were conferred upon the following students, by President Dr. F. M. Cahill:

Sherman Aldridge, Irwin H. Baird, John A. Carlsen, William H. Chapman, Louis N. Davidson, Melvin L. Dietrich, Emanuel S. Freitas, Rece C. Gregory, Herman C. Groeteke, William C. Logan, Harold McDonald, Abner H. Stafford, Jonas Wm. Trowbridge, David C. Wilke, Arthur H. Williams, Roy Emil Willie, James T. P. Wright.

(Continued from page 411.)

Count's book, "Diseases of Poultry" would suit, but for you and for me I think Ward & Gallagher's would be the best.

Now I hope that the veterinarian will not miss his chances to help out the poultryman. In this section of the country we are finding the development of commercial poultry farms very rapid. In our state we have a poultry farm of thirty-two acres and the man who owns that farm made a barrel of money last year and the year before. He wrote me the other day that chicken-pox broke out in his flock, and he had in one flock one thousand chickens in which chicken pox broke out. He said, "What will I do? Give me advice, I don't care what it costs. Tell me what to do." When a chicken man gets that way, don't worry about his ability to pay you. Don't worry, the fact that he needs help and will appreciate help guarantees payment.

Must Know More than the Dog

I heard a story many years ago that might be advice to us when we help the other fellow. There was a boy had a cur dog on the street corner. The dog was sitting on his hind legs doing tricks and stunts. A rather well-to-do man came along with a fine bull dog. The man was all dolled up and he watched the boy with his cur pup and finally he said, "Sonny, why is it your dog can do so many tricks? Here is my bull dog with pedigree as long as your arm and he can't do those tricks. Here is your cur dog as smart as can be." The kid said, "Well, mister, in the first place, you have got to know more than the dog."

I think before we advise the farmers we have got to know more than the farmer. You will find coming to you, particularly those who have practice in rural districts, a demand for information as to how to handle poultry disease problems. That is coming for the very reasons I gave you awhile ago. You will find Dr. Graham at the Illinois University taking an interest in poultry. He is every day getting in a better position to help you men out.

The time is coming when there will be a splendid opportunity for veterinary practice in poultry husbandry.*

*(Address delivered before the Illinois State Veterinary Medical Association, December, 1922.)

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If not, try it and be convinced that you need no other iron preparation in your practice, either for internal or external use.

Try it and be convinced that it is superior to the coal tar derivatives as a wound antiseptic and general disinfectant.

As a styptic it combines its highly potent antiseptic powers to a hemastatic influence much greater than Monsell's Solution.

Try it in Chronic Diarrhea of cattle, horses, dogs and fowls, in Johne's Disease and all Gastro-Intestinal Catarrhs. Try it to rid the intestinal tract of worms in any of the domestic animals. It is Hematic, Tonic, Vermicide, Disinfectant and Deodorant.

It is a wine-colored liquid containing 46 per cent of ferric sulphate—an original and unique commercial product found to possess high therapeutic merit.

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An exclusive product which should interest the veterinarian who "looks into and thinks of the future as well as the present."

Correspondence solicited from qualified veterinarians.

Lathrop Serum Co.
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Master John Robert Thomson, weighing eight pounds, arrived at the home of Dr. and Mrs. H. B. Thomson, of Danbury, Iowa, on May 20, 1922.

Dr. J. Rowland Snyder and Miss Lola Evelyn, daughter of Mr. and Mrs. Hugh Armstrong, of Gordon, Nebraska, were united in marriage on Wednesday, May 17, 1922.

Dr. Guy Parker Hatchett of Winchester, Tennessee, and Miss Dolores Healy of Indianapolis, Indiana, were married May 24th, at Indianapolis. Dr. Hatchett is a 1922 graduate of the Indiana Veterinary College and a member of the Theta Chapter of the Alpha Psi Fraternity. They will make their home in Chattanooga, where Dr. Hatchett will practice.

Dr. W. R. Scott has quit practice at Arkansas City, Kansas, to enter the government service. The esteem in which Doctor Scott was held by many residents and friends in Arkansas City was attested to by a public farewell, given for him a few evenings prior to his departure.

Dr. W. A. Litton has moved from Lake Charles, Louisiana, to Port Arthur, Texas.

Dr. A. C. Burns, Cleburne, Texas, narrowly escaped with his life when caught in a flood recently. Dr. Burns lost his automobile in the accident.

Dr. H. A. Hoffman is now practicing in Xenia, Ohio, having moved there from Plain City.

Dr. George Gordon, well known to many Illinois veterinarians, has sold his practice in Gibson City, Illinois, to Doctors McBride and Walters. Dr. Gordon has moved to Bloomington where he is now engaged in the tire business.

Quince Harris, father of Dr. Harris of Plainville, Illinois, dropped dead while accompanying his son on a professional call, May 10.

Journals are like men. They are imperfect. Some have chills; some fevers; some wabble, and some have cooties.—W. L. Williams.

A new veterinary hospital was built recently by Dr. E. B. Ledyard, of Ohio City, Ohio.

Dr. J. S. Koen delivered the baccalaureate address at the commencement exercises of the St. Joseph Veterinary College, May 16, 1922.

Dr. W. H. Buchleiter recently moved from Braddyville, Ia., to Coin, Ia., and Dr. R. T. Irwin moved from Coin, Ia., to Hamburg, Ia.

Dr. F. H. Hume recently located at Hume, Mo. The doctor was formerly in practice at Leon, Ia.

Dr. L. T. Kilfoy is now in general practice at Albia, Ia., having moved there recently from Melrose, Ia.

Dr. and Mrs. Richard H. Wharton of Lost Springs, Kansas, announce the arrival of a son, weight 9 lbs.

Dr. S. B. Aldrige of Norborne, Mo., recently had the misfortune of having his car burned while making a call.

Dr. C. D. Dailey of St. Elmo, Illinois, has accepted a position with the Liberty Laboratories as sales representative and laboratory assistant and has moved to Ralston, Nebraska.

Dr. D. L. Schantol has moved from Arispe to Osceola, Iowa.

WATSON! PAGE DR. KAUPP

Did you know that spring chicken and our good old roast turkey belong to "a group of chiefly terrestrial, polygamous praecocial ptilopaedic birds, with schizognathous palate, schizorhinal nasal bones, sessile basipterygoid facets, a hypoclidium, a muscular gizzard, no intrinsic syringeal muscles—the bill corneaous, with the culmen rising on the forehead"? —G. O. K.

(Chicago Daily News, May 5, 1922.)

"ATABOY"

Say! Look. Take Notice. I was brought out as a candidate for sheriff by my friends against a "hard nut" and was nominated by a large majority.

My opponent received 874 votes and I got 1,134, a plurality of 460. November 7 is general election. My friends say they will make it 1,500 votes. I would have done better if it had not rained. Dr. W. H. May.

Nashville, Ill.

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Dr. J. S. Sanders, Sutherland, Iowa, has re-entered veterinary practice after engaging in farming for several years.

The salary of Dr. William F. Doyle, veterinarian for the New York Fire Department, was increased from $4,700 to $5,500 a year recently.

Dr. Elmer A. Assmann, a member of the Ohio State University faculty, Columbus, Ohio, is one of the owners of the largest boarding and breeding dog kennels in the central states. A fifty-seven acre tract was recently purchased by the owners of the enterprise.

Dr. Jay Cottingham, a recent graduate of the St. Joseph Veterinary College, is practicing at Motley, Minnesota.

Dr. E. G. Kuykendall, for many years a practitioner and resident of Carmi, Illinois, has sold his practice to Dr. W. J. McIntosh.

Dr. George Goubeaud is veterinary health officer of the city of Waxahachie, Texas.

Dr. Owen H. Cripe, graduate of the Indiana Veterinary College, 1913, and a member of the veterinary corps during the period of the war, is located for practice at Attica, Ind. He was formerly located at Royal Center, Ind.

Dr. W. E. Carey, formerly of Wells, Minnesota, has located for practice at Good Thunder, Minnesota. Dr. Carey is a graduate of the Chicago Veterinary College and grew up in the live stock business with his father Wm. Carey, formerly owner of the Shady Creek Stock Farm at Mapleton, Minnesota.

Dr. J. S. Koen, after making an auto trip through Illinois, Iowa and Missouri, reports that while some veterinarians are still complaining of quiet times others are very optimistic. Quite a little hog cholera is reported and farmers have been immunizing their herds earlier than during former years.

The blood of horses affected with infectious anemia (swamp fever) retains its virulence for at least one year after the primary infection. The infection can be transmitted by subcutaneous or intravenous injections hence care should be exercised in the use of a hypodermic syringe to avoid the transmission of the virus.